American Business Is Sound to the Core

THREE-QUARTERS of the business year of 1926 has passed into history. From a commercial standpoint so far, 1926 has been the best year for corporate earnings since the War. This year will go onto the records as the most prosperous year in the history of America.

Corroboration of these statements is found in the fact that the dividend distribution as of October 4th is estimated at over five hundred million dollars. We also are in possession of forecasts by eminent financial authorities to the effect that the distribution of dividends, both stock and cash, of January first, 1927, will be the largest in the history of American commerce.

Business is certainly on a very sound basis and both the producing and merchandising situation would seem to guarantee an indefinite prolongation of these prosperous times. The foremost factor probably in creating and maintaining this wholesome situation is the so-called hand to mouth buying policy, which was inaugurated by the consumers of commodities of this country in 1923.

In the following three years, it resulted in the liquidation of all excess inventories of stocks and goods, and it also had the salutary effect of curbing the over-production of commodities in those lines where it existed. The result is that today we are confronted with a paradox of merchandising.

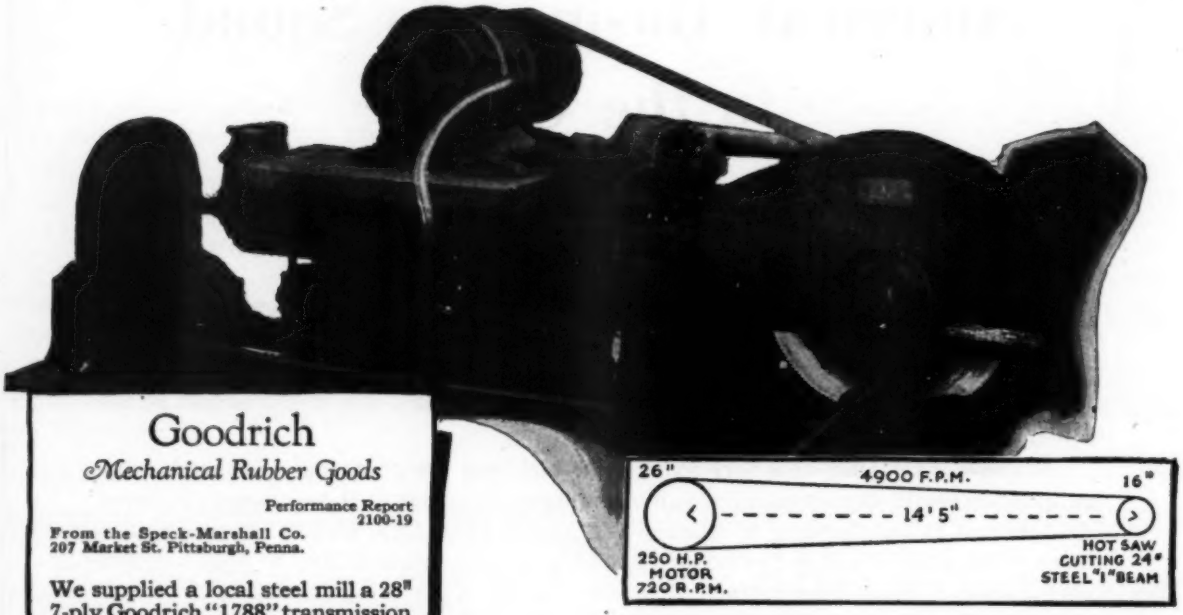
The volume of general business has been increasing and running consistently higher than a year ago up to the present time while the average index commodity price has declined since the first of January. There has been a commodity decline of 10 percent in the past eight months while there has been an increase in the volume of business of at least 8 percent. In former years up to 1923, the volume of general business increased on account of the increase in commodity prices. Buyers hastened to get possession of goods and commodities in the face of a rising market, but this year, there has been no rising market, and yet, the volume of general business is the greatest on record.

This indicates that there are no stocks of unsold commodities piling up in the hands of retailers, wholesalers or consumers, but the great flow of commodities from producers to consumers is going into actual consumption daily leaving no unsold stocks on hand. Proof of this lies in the fact that the general statement of banks throughout the country shows that bank loans to merchants are not increasing—in fact, in several districts, they are decreasing. Therefore, retailers, wholesalers and consumers are not borrowing money on increasing inventories.

A safer, more wholesome, sounder mercantile situation could scarcely be inaugurated. There is ample justification for this in the fact that the American consumers of products are rich. They have money; labor is well employed; finances are easy; credit is abundant; but best of all, there seems to have been established finally on the part of the consuming trade a return of confidence in the stability of the commodity market. A volume could be written on the merits of this present situation. It is extraordinary and unusual, but wholesome and strong.

AMERICAN BUSINESS IS SOUND TO THE CORE.

Belt-testing Drives of Industry



Goodrich

Mechanical Rubber Goods

Performance Report
2100-19

From the Speck-Marshall Co.
207 Market St. Pittsburgh, Penna.

We supplied a local steel mill a 28" 7-ply Goodrich "1788" transmission belt, made endless at the factory, which was installed on a hot saw January 1. Previous to that time they had been using Hot Saw belts fastened with steel fasteners which gave an average service of about 30 days.

This was the first "1788" Endless belt they had tried. It has been operating continuously for nearly six months and is in excellent condition. It shows little or no stretch.

This is positively the most severe service we know of for a transmission belt.

The Hot Saw

Driving a saw cutting 24 in. steel girders, this Endless Goodrich "1788" belt has lasted six times longer than belts previously used. It is an example of what Goodrich belts, properly applied, are doing on hard drives in all industries—what they can do to help you solve *your* transmission problems.

THE B. F. GOODRICH RUBBER COMPANY
Established 1870 Akron, Ohio

Goodrich
Transmission BELTS
"Best in the Long Run"

Observations of a Traveler

The Invention of Groundwood Pulp

THE question of priority of invention of groundwood pulp is still being debated. Coincident with the appearance in the September issue of THE PAPER INDUSTRY of the article on "Early Manufacture of Newsprint from Woodpulp," by George W. Knowlton, the Nestor of papermaking in this country, word was received of the erection of a tablet at Upper Sackville, N. S., to commemorate the invention of the making of paper from spruce wood fiber by Charles Fenerty, who is credited by the Nova Scotia Historical Society with having made experiments in the production of a papery material from wood pulp as early as 1839, though he did not make his invention known until 1844. Fenerty never patented his invention but left it to others to exploit it commercially. The tablet erected by the Nova Scotia Historical Society at Upper Sackville is inscribed:

> "Here in January, 1821, was born Charles Fenerty, who, after experimenting from about 1839, produced paper from spruce-wood pulp, which invention he made public in 1844. He died at Lower Sackville, June, 1892."

Historians of papermaking are aware of a number of claimants for the honor of discovering the process of grinding wood to make paper pulp. Schaeffer's experiments at Regensburg, Bavaria, with the material of wasps' nests which, as Reaumur had previously observed, consisted of wood fiber obtained by the insects from partially decayed trees and timber, are recorded in his famous book on the subject. Later, in 1800, Matthias Koops, a native of Holland, published a book, the appendix of which was printed on paper made entirely of woodpulp, and he was probably the first papermaker to recover and remanufacture waste printed paper, for he issued a treatise on paper made entirely of this material.

The discovery of groundwood pulp as a papermaking material is, however, generally credited to Friedrich G. Keller, a weaver of Haynich, Saxony, who in 1843 produced the first sheet of pure wood paper manufactured.

Keller's experiments leading to the grinding of woodpulp are narrated in the new edition of **Hofmann's Practical Handbook of Paper Manufacture,** published this year by Verlag von Carl Hofmann Gmb H. in Berlin. The idea of cooking sawdust and other sawmill waste in strong soda lye to produce a paper pulp at first engaged Keller's attention, but a recollection of his childhood days when he and other lads of his own age played in cherry time at making cherry chains sent him off on a new tack.

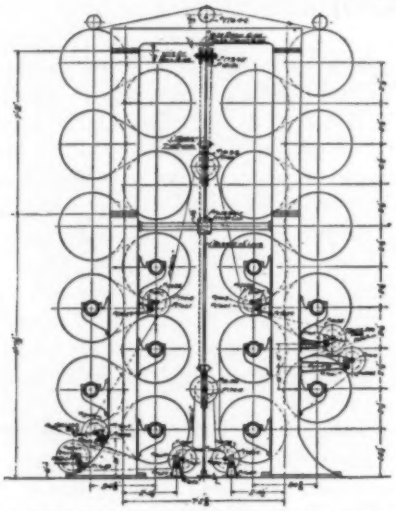
The cherry pits imbedded half way in holes bored in a small slab of wood were pressed against the grindstone until the soft interior was exposed, the opposite end of the cherrystone being similarly treated, so that the stones could be pierced and threaded to make a chain or necklace. Keller recalled the mass of white pulp of mingled cherrystone and wood that accumulated after the grinding operation, and this gave him the idea of grinding wood against a stone to reduce it to pulp. Rigging up a small grindstone such as was used for sharpening tools, he placed this over a trough filled with water; with one hand he pressed a slab of wood against the grindstone and turned it with the other. Collecting the accumulation of milky fibers in the water below the stone, and with the idea of further disintegrating them, he cooked the mass in a pot. The cooked pulp was then strewed over the surface of a linen cloth, which was folded and pressed to remove excess water. The pressed pulp was then loosened from the cloth by means of a knife and placed between the leaves of a book where it was further pressed before being dried in an oven and given a slight surface polish.

Thus was made the first sheet of pure groundwood paper, a small piece to be sure, not larger, as he says himself, than a 10-mark note; but the process by which the wood was pulped constituted a real invention and became the prototype of all subsequent processes for grinding tree logs to make mechanical woodpulp. A year later, in 1844, according to the narrative by Dr.-Ing. Joh. Teacher, editor of the new edition of Hofmann's book on papermaking, Keller was able to turn out 100 kilos of groundwood which was beaten up with rag pulp and made into paper.

In 1845, for the sum of 1,650 marks, Keller sold the rights in his woodgrinding process to Heinrich Voelter, a native of Heidenheim-on-the-Brenz, and it was from Voelter that the late Albrecht Pagenstecher purchased, in 1866, the rights to operate the process in the United States. Early in 1867 Mr. Pagenstecher operated a pulp mill at Interlaken, Mass., then called Curtisville. An early form of Voelter's grinder is still in existence at Knowlton Brothers' paper mill in Watertown, N. Y.

The honor of introducing the manufacture of groundwood into the United States belongs therefore to the Pagenstecher family, and Albrecht Pagenstecher who died at his home near Newburgh, N. Y., last August in the eighty-eighth year of his age was a true pioneer in the manufacture of cheap newsprint paper.

As to the acclamation by the Nova Scotia Historical Society of Charles Fenerty as the original inventor of mechanical woodpulp, the available evidence does not seem to warrant it, there having been earlier workers in the field, though the event may perhaps be but another illustration of the phenomenon of an invention being conceived simultaneously by different people in different parts of the world.



The illustration is a reproduction of blue print of Sheahan Paper Carrier installed on a Vertical Dryer. Just as we are the only manufacturers making Vertical Dryers, so we are also the only manufacturers making Sheahan Carriers for them.

The system consists of two endless ropes running side by side on flanged rims fastened to the ends of the dryers. The wet paper coming from the press passes between these ropes and is thus carried automatically over the dryers.

A Few Recent Installations of Sheahan Paper Carriers

The Richardson Company
The Beckett Paper Co.
The United Paperboard Co.
Champion Coated Paper Co.
Consolidated Paper Co.
North Star Strawboard
Bogolusa Paper Co.
Franklin Board & Paper Co.
United States Gypsum Co.
Waterway Paper Products Co.
Beveridge Paper Co.

Figure it out for yourself

Just take your pencil and figure what it costs you to be without a Sheahan Paper Carrier on each of your dryers.

Instead of the backtender slowly and painstakingly leading the paper through by hand, this equipment takes it **automatically** from the press to the calender end of the dryer and at the same speed as the machine is running. The result is increased production.

Instead of a pile of paper broke because of slack paper, this device eliminates slack and its resulting broke. Moreover, it does away with missed ends, spearing because of missed ends, damp paper because of slack, and danger to your operators. You make an actual saving in dollars and cents.

In every installation which we have made, this increase of production and saving of loss has more than paid for the equipment within a very few months.

The Sheahan Paper Carrier can be installed on machines of all types and makes—news, book, cover, straw wrapping, board, and specialty —and on both new and old equipment.

It costs you nothing to let us lay the complete facts before you. Rather, it may be the means of saving you thousands of dollars.

The Black-Clawson Company, Hamilton, Ohio
Established 1873
Export Offices: 15 Park Row, New York City
Builders of Highest Quality Paper and Pulp Mill Machinery. Patentees and Sole Builders of Vertical Dryers

Illustration shows the special Black-Clawson flanged-rim bolted to the dryer. Notice there are only three places in which to attach it. Installation can be made in one Sunday or at most two days.

To facilitate installation we furnish a drilling jig to drill the necessary holes—it is the same jig we used to drill the bolt holes in the rim. An easy, accurate fit is always assured.

Notice, too, that the flanged-rim is split at the two lugs. This makes it possible to attach the rims without lifting the dryers from their bearings.

BLACK-CLAWSON

SHEAHAN CARRIERS

Built with Machine-Tool Accuracy

THE PAPER INDUSTRY

REG. U. S. PAT. OFF.

Vol. 8 OCTOBER, 1926 No. 7

Interesting Pulp and Paper Laboratories of Europe

1—London; The Laboratories of Cross and Bevan

By LOUIS E. WISE, Ph.D.

Professor of Forest Chemistry in the New York State College of Forestry, at Syracuse University

The author of this article is spending a year in Europe in study. In this study, he will visit a number of European laboratories which are interested in the technological study of raw materials as used in the manufacture of pulp and paper, and has consented to write a series of eight articles for publication in The Paper Industry, describing the work being done in them and something about the personnel of each.

The reader will observe that Doctor Wise has adopted a popular style of presenting his subject without forfeiting technical interest.

CROSS AND BEVAN! How often that combination has figured in the history of English papermaking during the past four decades! How little work has been done in the various cellulose industries that has not come directly or indirectly under the scrutiny or supervision of these two men. Bevan has left his researches and belongs to the ages. Cross still carries on. The firm of Cross and Bevan remains a British institution of unusual importance to the technologists using cellulose, the principal component of wood, of pulp, and of paper.

A Quaint Setting

It was a rainy morning when I made my quest. The London busses, with their brass rails and sleek coats of red paint, marred by queer advertisements of soft and hard drinks and the latest comedies, were crowded with passengers. Our own bus nosed its way through the heavy traffic, twisting and turning into impossible streets, through seemingly impassable crowds of pedestrians, guided by a miracle driver and by a series of marvelous policemen, whose white gloves seem to control the flowing tide of the metropolis.

At the Gaiety Theatre I am let down by the conductor, and airily waved in the general direction of the Law Courts. I paddle towards them on the Strand and after several false moves, corrected by the omniscient police, I gain a central gothic arcade reminiscent of an abbey blackened by centuries of coal dust, and frosted in spots where the scrubbing brush has managed to loosen the soot. Through this richly carved recessed archway, and up innumerable slippery steps I go, and then at their head I turn into a street or labyrinth which houses the Courts of Justice. Several barristers pass me, trying vainly to save the curl in their white wigs by using umbrellas. Finally, at a corner, again under the helmsmanship of two policemen, I find the object of my quest—New Court—which looks liks a very ancient, portly red building, but which is actually a series of ancient red buildings moulded into one. I discover my mistake as I enter New Court arch, and suddenly find myself in a green quadrangle, completely bounded by the red buildings referred to as New Court. The various entrances are marked by Roman numerals, and as Roman III marks my special gate, I enter here, and leave the rain to beat down on the trees in the quad.

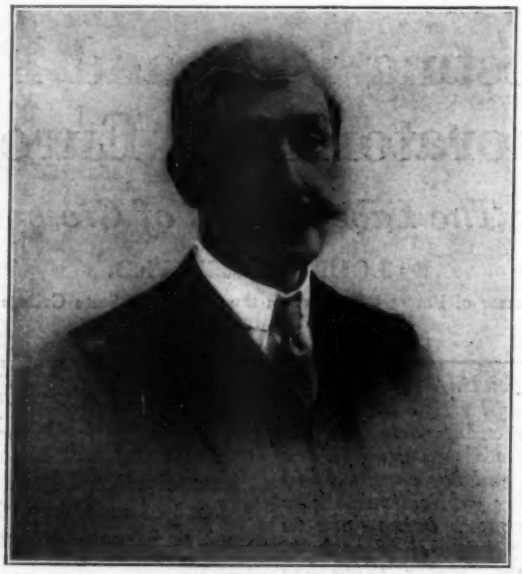
Now begins a long climb up a narrow spiral stairway, each tread inlaid with innumerable little blocks of blackened wood that have been frowned upon for decades by a series of leaded windows. St. Paul's and the Tower have made me an expert climber of circular staircases, so the ascent is none too difficult.

At each landing I find twin, dark green doors, and on the fourth floor, I discover the particular door that I am seeking. It is marked **Cross and Bevan.** Here, then, above the Royal Courts of Justice, quaint-

ly hidden midst solicitors and barristers, are the laboratories that have meant so much to the cellulose industries of the British Empire, and which for years have been making increasing contributions to her pulp and paper industry.

Cellulose Research of Major Importance

The "dean" of pulp and paper technologists sits in his sanctum. It has been his office for forty years past. Charles Frederick Cross is a kindly little white-haired gentleman, with heavy cream-colored mustache, and a British sense of humor. He immediately impresses the observer by his mental agility, and by his keen interest in the productivity of his laboratories and of all others that dabble in cellulose. Almost instantly he tries to get my ideas on the function of **lignin** in the plant. (Lignin is that component of wood which usually gets lost in the waste liquors of the sulphite pulp industry, and the chemistry of which is in a most confused state.) Since my ideas on the subject are none too definite, the subject lags until Mr. Cross shows me a sample bottle of a special brand of sulphite waste liquor, which has its own peculiar merits, and which may be of future industrial value. This liquor has come, not from the usual type of sulphite cook, but from a much less vigorous one, in which the spruce chips have been heated with a seven per cent solution of sulphurous acid—free from lime salts and from sulphuric acid—at 100-110° Centigrade. The process is one of Mr. Cross' recent pets, which he has patented together with Dr. Englestad of Nygard, Norway—E. P. No. 12,943.



The late Edward J. Bevan, partner and life-long co-worker of Cross

A vast array of industrial problems find their way up those circular staircases into the Cross and Bevan laboratories. Problems dealing with the suitability of certain fibers for certain specific purposes; problems dealing with all kinds of chemical uses of woods; problems that harass the printers, the "colorists," the textile men, and the artificial-silk makers, as well as the multifarious, knotty problems that worry the pulp and paper men of England keep Cross and Bevan on its toes. As one of the energetic men of the laboratory, Dr. Charles J. J. Fox, told me, while the laboratories have always done whatever routine technical work has come to them, this type of routine work has always been considered as subordinate to research work. Clients who submitted samples to be analyzed have always been invited to state what technical difficulties led them to consult "Cross and Bevan." Not infrequently the real causes of the difficulty were unknown to the clients themselves, and many investigations followed the original analytical work. Such investigations, coupled with personal interviews and reports, established a large number of friendly contacts with leading industrialists that have given Cross and Bevan a preëminent position in chemical industry, and made them personally beloved to the men in that industry. Dr. Fox, to whom I am indebted for many courtesies, also told me that during the past few years the sulphite process has claimed the special attention of Cross and Bevan, with due consideration to the exploitation of its waste products, one of which Mr. Cross had shown me that rainy morning.

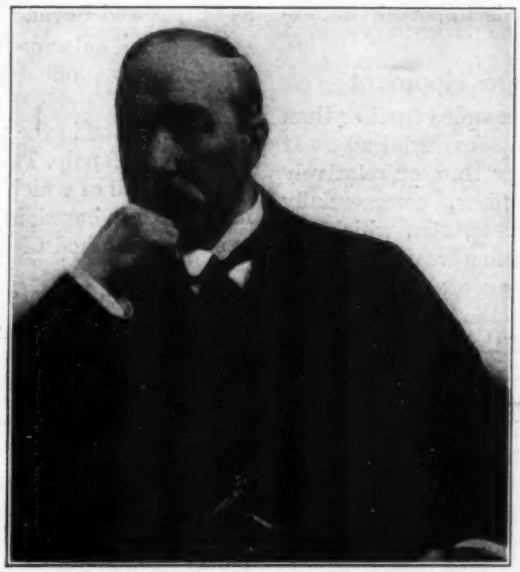
An Inseparable Friendship

Despite the fact that Mr. Bevan died prematurely, some five years ago, his work is so completely interwoven with that of Mr. Cross, that the lives and contributions of both men must be considered together. Cross and Bevan were close friends at college. They had similar interests in the prosecution of research, and in the lifelong partnership that knitted them even more firmly together, the work of each man supplemented the work of the other. In any technological project of the paper industry, or for that matter of any of the cellulose industries, one seldom heard the name of Cross mentioned, unless mention was also made of Bevan. In their well-known publications on papermaking and on problems dealing with pulp or with cellulose, the authorship was nearly always a joint one. Often, it is true, other chemists of their laboratory joined them in their researches and helped materially in their contributions. These men received full credit for their work and their names are coupled with those of the two friends, whose names are linked together like those of Damon and Pythias.

Charles Frederick Cross was born seventy-one years ago, and Edward John Bevan was born a year later. Cross received his education in King's College, London, at the Polytechnikum at Zürich, Switzerland, and later at Owens College, Manchester. Bevan, a delicate youngster at Birkenhead, near Liverpool, showed such an aptitude and interest in chemistry, that his parents helped locate him as an assistant in the laboratories of a large alkali and soap company.

It was not long, however, before Bevan was convinced that he required a systematic higher education, rather than practical experience alone, and with this end in view, he entered Manchester University, and the same Owens College which also housed and inspired young Cross. At that time, Manchester ranked as one of the leading chemical centers of England.* Its students were taught by such masters as Roscoe and Schorlemmer, and research work was expected and encouraged. It was here that Cross and Bevan met; and it was here that their life interests were shaped and interwoven. Both of them became keenly interested in the chemistry and technical utilization of cellulose, which, as I stated above, is the principal component of wood and paper.

During the first years after leaving college, the two young men kept in close touch with each other by correspondence. Bevan entered the employ of the Musselburgh Paper Mill of A. Cowan and Co., and in the three years that he remained there, obtained valuable experience in applying his knowledge to the peculiar problems of the paper industry. Cross became interested in the chemical constitution of jute fiber, and in its technological development. The interests of the two young men were plainly converging. Both of them became more and more fascinated in purely scientific studies of vegetable fibers, and so each reached the conclusion that they should work together.



Charles F. Cross, F. R. S., Cellulose Chemist and Dean of Pulp and Paper Technologists

Originally, the coalition had been formed for the purpose of studying, in a purely scientific way, the chemistry of jute, which had held Cross's interest, and certain influential men like Hugo Müller, himself a famous cellulose expert, helped him in 1883 to enter the Jodrell Laboratories at Kew Gardens on the outskirts of London. Purely scientific work, however, even in those early days, required money and neither Cross nor Bevan was affluent. To meet the situation they formed the famous partnership of "Cross and Bevan" which even death could not destroy. That same year they undertook a piece of pioneering work in British pulp manufacture, at the request of Mr. Fry of Thomson, Bonar and Co. They were assigned the problem of developing certain phases of the sulphite process for making pulp from wood, devised a number of years earlier by Ekmann, the Scandinavian chemist, and originally conceived by Benjamin Tilghman, at the time of the Civil War. It is interesting to note that after forty years or more, the laboratories of Cross and Bevan are still greatly interested in the sulphite process. Their early work was of historical importance, since it helped to establish firmly the use of wood as a raw material in the British paper industry. It was under the effective management of Mr. D'Oyley Mears at Ilford, that the process became a practical success.

*It still has a remarkable chemical faculty which includes some of the most brilliant chemists in England.

The Viscose Process Discovered

It was some seven years later that the partners, aided by Mr. Beadle, made a discovery which served in linking the manufacture of pulp with that of textiles. The friends found that both chemical wood pulp and cotton, which are ordinarily quite insoluble in water, when treated cautiously with caustic soda solution, followed by treatment with carbon bisulphide (an ill-smelling, inflammable liquid), yielded a substance that could be shredded and reduced to crumbs, and which when mixed with water gave a thick, heavy sirup. This was strange enough, but the remarkable part of the discovery lay in the fact that after this sirup had been stored for just the right length of time, "ripened" properly, and was then allowed to run into acidulated water, the cellulose was regenerated in the form of a jelly. If the ripened sirup was forced through small openings (spinnerets) into dilute acids, at just the right rate of speed, the cellulose was also regenerated, but as fine filaments, which when cabled together resembled natural silk, and which took dyes exquisitely. This then, in a nutshell, was the discovery of the viscose process for producing artificial silk (rayon as it is called in the United States). The discovery was followed by industrial pioneering work on viscose through a series of companies in London, Breslau, and Paris. The process had a hard battle for its existence, but today we know that the viscose method of producing artificial silk is fully established as an integral part of the textile industry throughout the entire civilized world. Of the four methods used in the production of artificial silk, the viscose process is most important, and the one most widely used.

Cross and Bevan not only discovered the process, but they helped in the development of the Viscose Spinning Syndicate which developed the spinning of

artificial silk, and which was afterwards acquired and further developed by the famous house of Courtauld's Limited. Furthermore, they published a series of scientific papers in which they sought to explain the underlying principles of their discovery. It must be noted that Cross and Bevan were always interested in finding the reasons for the chemical behavior of cellulose, and while some of their explanations have proved untenable and lacking in clearness, and others have been vigorously disputed, their explanation of the remarkable viscose reaction is still an exceedingly useful one and one that has been a great stimulus to research work in this important industrial field.

Cellophane, a Later Development

The discovery of Cross and Bevan led further than the conversion of wood pulp into artificial silk. It pointed the way towards making thin, or relatively thick, transparent, cellulose films, commercially known as cellophane, capes-viscose, etc., which are now used in the manufacture of fine wrappings, sausage casings, bottle-caps, grease-proof containers, etc. These sheets are formed when the ripened viscose solution, instead of being forced through small openings, is forced into an acidulated, coagulating bath through thin slits. Recent developments of viscose are also the very beautiful artificial straw, artificial "horse hair," and the Italian artificial wool, known as "sniafil." All of these products have widened the horizon of sulphite pulp manufacturers, and none of them would have been possible without the fundamental discovery made by Cross and Bevan.

Chlorination Method for Determining Cellulose

If they had done nothing more than this, the two friends would have found their place in the sun among the greatest British industrial chemists. However, they did far more. One of the reactions which they applied in their analytical laboratories now promises to assume industrial importance. We refer to the excellent "Cross and Bevan" chlorination method for determining cellulose in vegetable fibers and especially in wood. This method, after many years of refinement, modification and criticism, remains the best means of finding out how much cellulose, the main pulp-making constituent, is present in woods like spruce, hemlock, poplar, pine, or in any of the multifarious vegetable fibers used in the paper industry.

The method as applied in the laboratory today is briefly as follows:—A finely divided sample of wood is carefully weighed, treated alternately with chlorine gas, sulphurous acid and sodium sulphite until all of the lignin has been removed. The residual substance after careful washing and drying is then weighed and termed the "total cellulose" present in the original sample. The interested reader can find the details of Cross and Bevan's method in their own words in their well-known monograph on Cellulose, and also in articles published by members of the United States Forest Products Laboratory, in the various issues of the Journal of Industrial and Engineering Chemistry between 1917 and 1924, in which full directions are given for applying the **modified** Cross and Bevan method to wood. Besides these, a large number of articles on Cross and Bevan's cellulose determination have been published by various investigators in all parts of the world. It is becoming good form among chemists to speak of the cellulose left after chlorine treatment, as described above, as "Cross and Bevan Cellulose."

The use of chlorine introduced by Cross and Bevan presents great industrial possibilities for future pulp manufacture, since the chlorination of wood is now being exploited in the conversion of woods like poplar into chemical pulp. The Cataldi, Pomilio and de Vains processes, all of which use chlorine in changing wood into pulp, are based, in principle at least, on the early analytical method of Cross and Bevan.

Recipients of Many Honors

We could give other examples of contributions of Cross and Bevan. For instance, a story might be told of their part in the development of fine filter papers of England. But I feel that enough has been said of their researches.

Both Bevan and Cross have been signally honored. Bevan, who was a meticulously careful analytical chemist, held the important post of Public Analyst, under the appointment of the Middlesex County Council, and was instrumental in building up the Society of Public Analysts, of which he later became president.

Cross was awarded the medal of the Society of Chemical Industry in 1916, for his conspicuous services to that industry. He also received the research medal awarded by the Worshipful Company of Dyers (in 1918), and had the extraordinary honor of being the Perkin Medallist, three years ago. In 1917, Mr. Cross had been elected a Fellow of the Royal Society. In 1921, he became the **First** Honorary Member of Technical Section of the Papermakers' Association.

Whatever has been said of the writings of Cross and Bevan—and they have at times been justly criticized—the two friends will remain luminaries in the annals of British pulp and paper technology.

The death of Bevan was a heavy blow to his partner, and to the entire laboratory. Judging from the descriptions given me, he was a man of the greatest charm; handsome, conscientious in the extreme, forgetful of himself, and keenly interested in many things besides chemistry. He loved motoring and golf. He loved the drama. He gave all he could for England. His death on October 17, 1921, may be attributed to the war, for he served faithfully as a "special" in his home district (Watford) during hos-

tilities, and his duties were probably too strenuous for a man of his advanced years.

Cross, seated in his little office, or attending his board meetings, remains the "oracle" in England, when information is sought on the pulp and paper industry. He has had a lifetime of experience, and he has the mellowness which comes with such experience. When there is a section on Cellulose to be written in the Encyclopediaea Brittanica, Cross writes it. If the historical development of some cellulose industry in England, or elsewhere for that matter, is required, Cross is consulted. In the chemical yearbooks, Cross outlines the progress of the cellulose industries. The most widely quoted monographs on cellulose have emanated from the pens of Cross and Bevan. Their principal book on Cellulose was followed by four volumes entitled Researches on Cellulose, and one of these volumes, the joint work of Mr. Cross and Dr. Dorée, was published after Bevan's death. The textbook on Papermaking by Cross and Bevan had gone into several editions some eight years ago.

Only a month or two ago, Cross wrote an illuminating article for a little handbook published in connection with the annual meeting of the Society of Chemical Industry and the Congress of Chemists, which was held in London, last July. In this article, he showed how England—e. g., London—had played a part in the development of the cellulose industries, and he laid special emphasis on the paper industry. He told how the formula and technique of making a "Bank of England 5£ note" remained the secret of the House of Portal, papermaker in Laverstroke. He told in a well-turned paragraph, how a special type of machine was devised for the manufacture of British treasury notes. He sketched the importance of the Balston family of Springfield Mills, Maidstone, which for 150 years had kept up the tradition of making excellent drawing papers, and which more recently had made Whatman filter papers possible. And then, so as not to play favorites, he told of the excellent drawing papers made by another firm, J. Barcham Green and Son, in Hayle Mill, Maidstone, which have been standardized by the Royal Society of Painters in Water Color.

Cross's little article is full of interest. In it you feel the pride which successive generations of British manufacturers take in their paper products. The father hands over his knowledge, and business, and traditions to his son, and this son passes them on to his heirs. We get the feeling of continuity, solidity, standardization, conservatism. These industries are not the results of mushroom growth. They reach back into the past. They represent the tireless work of generations of enthusiasts, and yet, I hasten to add, they do not reject improvements, or new processes. They are willing to investigate, even though they may be slow to accept new changes. This same spirit is to be found in the little laboratories in New Court, back among Law Courts of old London.

"Hasn't Scratched Yet"

By B. T. McBAIN, Portland, Oregon

A WELL known firm making a cleaning compound advertises with the picture of a baby chick and the words, "Hasn't Scratched Yet." This is good and we are going to usurp their thunder only to change it a bit and cut off the "has" making it "Not Scratched Yet," for the surface of the great possibilities along pulp and paper lines for the Pacific Northwest is not scratched yet.

There are many grades of paper used in the 12 Pacific States (those states reached cheaper by rail from west than east) and not made on the Pacific Coast at all. Only about 60 per cent of the total requirements of 1,000,000 tons, figured on the basis of population at the 1925 per capita consumption of 160 pounds are made on the Coast. This is taking into consideration the product of all bag, wrapping, newsprint, board, roofing, book, tissue, bond, grease proof, and all the kraft paper and other mills now building together with about 100,000 tons from British Columbia which comes into these states.

Now who makes the balance of 400,000 tons? Canada furnishes part at least, 25,000 tons; Sweden furnishes probably that quantity, but the southern states kraft mills through their bag factories and the five paper mills of the East and Middle West supply the balance.

Texas is larger than California and according to Uncle Sam uses more paper.

California with 3,426,861 people (1920 census) uses 274,150 tons.

Texas with 4,663,228 people (1920 census) uses 373,060 tons.

The Pacific Coast is just now scratching the surface of that southern states' paper market; besides, what goes there of newsprint goes from British Columbia.

The Pacific states make no fine papers like ledgers, fine writings, fancy cards, book covers, and it is surprising that of the 120 to 200 tons per day of toilet paper consumed, only about 2½ per cent of the total is being arranged for from Pacific Coast mills.

It is queer how the West with all the pulp wood is not even making more than 60 per cent of its own requirements, instead of making all of its own and half of that required for the balance of the forty-eight states.

There is enough pulp wood wasted each year in Pacific Coast saw mills alone to make all this additional production, but instead it goes up in smoke.

Now, my readers, believe me, or believe my friends who disagree with me, as you please; you won't hurt me, but will deceive yourselves if you do not

come out here and find out for yourselves that what I say is not only all the truth, but not strong enough, for those who are preventing the proper information to go forth are responsible for the conditions that prevail.

In the East, your pulp wood costs from $12 to $20 per cord. In the West, it is being burned up, because it is a drug on the market and absolutely has no market value.

It takes two cords or more to make a ton of chemical pulp. Your wood cost is $24 to $40 per ton in the East. The freight east from the Pacific Coast is $13 to Wisconsin and less by water to the Atlantic Coast.

Your wood West can be gotten at a bargin figure if you come while it is a drug on the market.

If you want any more, write me and I will be pleased to supply the balance required.

The surface is "NOT SCRATCHED YET!"

Encouragement of Original Designing

Benefits Provided for Paper Trade in Proposed Design Registration Measure

By WALDON FAWCETT

THE loss to American industry by the underdevelopment of commercial designing is lamentable but not one mourner in ten who bemoans in general terms the shortcomings in design originality, has taken the trouble to ascertain the actual facts concerning this subnormalcy of art blood pressure, or how it affects his particular business.

Business men simply chime in on the common patter when they assume that France has virtually made herself independent of world competition in certain lines by the cultivation of artistic designs, applied to articles of manufacture. It is the truth, but in taking it as gospel these envious business men are wont to assume that the Government of France is mainly or wholly responsible for the triumph of art in industry. As a matter of fact, French industry has, to a considerable extent, worked out its own salvation in its recourse to skilful designing to give dignity and charm to utilitarian objects and to the backgrounds or settings of these commodities. The Government at Paris has helped, to be sure. French art museums have thrown wide their doors to afford inspiration to the commercial artists. But business itself supplied the "drive," serene in the secret that price competition is powerless against the product that captivates the senses.

All this misconception in the United States as to the part that the French Government has played in fortifying French industry in the citadel of design superiority is likely to serve a very good purpose. Without the supposed example, American business men would not have been so insistent that the Government at Washington extend the helping hand. There would be no such bill as the Design Registration measure now pending in Congress. This latter project would refashion the entire system whereby the protection of the Government is invoked for original designs. It is a desirable extension of Federal patronage or guardianship. For, whatever may be the situation in France, the element of design appeal cannot have full play in the United States until means be found to more effectually discourage the piracy of original designs.

With the awakening in business America of design consciousness and with the excellent chance that Congress will more adequately recognize the property rights in designs, it may not be amiss to examine into the question of how the encouragement of original designing benefits the paper trade. It is an issue that is vital even were Congress to take no action. For the spirit of art in industry is marching on determinedly. So much so, that every time that a new school of commercial art is opened anywhere in the country, a tremor-recorder should show an upward jump in the curve of the paper industry.

Opportunities in Industrial Art

In the opinion of the U. S. Government's staff specialists, the advance in industrial art benefits the paper trade in two ways. On the one hand, there is the opportunity—somewhat hazy as yet, in scope—for the improvement of the products of the paper and pulp industry. Exercise of originality and ingenuity in art expression is counted upon to enable the paper manufacturers to lay down in the market the raw material in forms more varied, more suggestive of fabrication and more tempting than has heretofore been possible. On the other hand, and even vaster in its possibilities, is the new vista of paper and pulp adaptations, that is opened to paper consumers.

To sense the lengths to which this last may carry the industry, it is but necessary to bear in mind that paper and pulp products are the logical, if not the only, mediums for a considerable share of the artistic expressions in industry. Business, in so far as its contacts with ultimate consumers are concerned, is in the package era, and going deeper day by day. Where the wrapper or the sealed carton is not intro-

duced for aesthetic reasons, it is likely to be all but demanded by the public for hygienic considerations or to afford assurance that a purchase is "the genuine." To every fresh demand for package evolution, the pulp and paper industry must respond if, indeed, it has not anticipated the summons.

If the pulp and paper industry has exceptional opportunities in the increasing dependence of all modern industry upon creative designing, it has likewise incurred unusual responsibilities. These responsibilities have proven, in some respects, a rather heavy burden upon the progressive forces of the paper industry under the limited protective conditions which have prevailed and prevail to this day. In order then to better appreciate how an improvement in the status of original designing will benefit paperdom, it is desirable to take a passing glance at existing circumstances.

Existing Limited Protective Conditions

As matters stand, the original design in industry, that is to say the form, style, or outline of an object or the ornamental device applied to an article of manufacture — as say, a surface design — has no standing as such under the trade-mark laws or the copyright laws of the nation. That is to say, a design owner cannot on the one hand, trade-mark a design in the sense that he would establish a monopoly in the basic idea or motif of that particular design. No more can he register an industrial design as a trade-mark. That has been unsuccessfully tried scores of times, as for example, by the man who sought to register as a trade-mark a perfumery bottle of peculiar shape. And by that other man who tried to obtain a trade-mark franchise for an oddly-proportioned bar on a fountain pen. The same fate overtook a firm that offered at a registry window at Washington a collar box that had the appearance of a drum. Likewise a seedsman whose paper supply house had outfitted him with a paper bag of unconventional shape and color.

On the other hand, the copyright laws, which have been set up to protect intellectual works or literary and art productions, afford no comfort to designs applied to articles of manufacture. The Copyright Office at the Library of Congress will bolster the rights of the author in the contents of a book but refuses to concern itself with the rights of the paper manufacturer or his customer, the book publisher, in a unique binding or a rare texture of paper which has been designed for that book. The Copyright Office will admit a circus poster as an intellectual or artistic production. But when it comes to an advertising novelty made of paper, a pasteboard cut-out or "dealer help," a dummy window display, a counter rack, or display carton, the censors at the Copyright Office are likely to insist that the design owner seek comfort at the U. S. Patent Office.

Thus it comes about that up to this time, the only fore-handed protection which can be invoked for an original design used in industry must be obtained via the medium of a patent. The very idea may appear incongruous to the paper manufacturer who has not looked closely into the situation. Because the average paper producer is wont to think of patents in one of two terms. At mention of the word "patent," there comes to mind the familiar form of patent known as a mechanical patent, as for example, the patent that is granted on a new or improved form of paper-making machinery. Less frequently encountered, but firmly established as an institution, is the process patent. An illustration is found in the formula patent obtainable by a trail-blazer who initiates a new process of paper making.

Overshadowed by these, but nevertheless presenting the forlorn hope of industrial designers, is the design patent. It covers, as the name would impute, a design invention applied to or embodied in an article of manufacture. Under a sliding scale of fees, an exclusive franchise for the reproduction of a design is obtainable for a term of 3½, 7 or 14 years. In terms of the law, the demand is made that a design, in order to obtain Federal recognition, shall be ornamental and artistic. In actual practice, as administered at the U. S. Patent Office and interpreted by the Federal courts, this exaction has been applied with extreme leniency. A low order of artistic merit has been condoned.

New Plan Proposed for Design Registration

For all that the design patent might appear, at first glance, to serve its purpose fairly well, this has been anything but true in fact. Numerous, emphatic objections have been laid against it persistently for a long time, and this branch of the patenting facilities has been comparatively little used. As a matter of fact, the temper of the industrial community with respect to the inadequacy of the design patent system could not be better exemplified than by the enthusiasm which has greeted the proposal to supplant the design patent system with a wholly new arrangement whereby the examination of designs for originality would be entrusted to the Copyright Office, instead of to the Patent Office, and designs would be registered or recorded instead of patented.

What is acclaimed the most in the contemplated program may bulk least in ultimate meaning to the paper and pulp industry as a whole. This does not belittle the boon in a promised simplification of the mere routine of design protection. It will be comforting, assuredly, to the interest with many designs to protect, if each confirmation of title to design property is obtainable at a smaller fee, and with less outlay for attorney's retainers, than under the present system. In kind, is the blessing that would be conferred if the creator with short-lived designs to protect, could count on his application

being "cleared" quickly. Just here, it may be confessed that not the least of the indictments against the present system of design patents is that it is of no use to manufacturers of seasonal novelties and all manner of designs of transient vogue, the market for which does not outlast the tedium of patent formalities.

Granting full measure of gain in these immediate material elements, the thought persists that, for the paper and pulp industry, the prime benefit of the new code would be found in certain sentimental equations. Overtopping all others is the shift of principles which would account the original design a work of authorship rather than a work of invention. Just here we butt squarely against the most serious shortcoming of the present system as it affects the development of original designing in industry. The statute as it stands demands, with inflexible insistence, that a design to be patentable must be an "invention." It is not enough that the design be new or a novelty. Less yet will it suffice that it be unfamiliar or beautiful. A new version of a theme old in art, whatever of fresh daring there be in the treatment, is under suspicion. The eligible design must be a product of the head as well as the hand. It must, in short, be the work of genius. And we all know how rare that is, if the test be carried to the nth degree.

The new deal in Government paternalism which is to encourage original designing assumes, as stated above, that a design is a work of authorship and a design author would be entitled to a copyright if he showed, in rendering an idea in artistic form, a degree of originality equivalent to that which the average literary worker evinces in writing a book or the musician displays in arranging a composition. There would not be the assumption, as at present, that a design must be literally brand new and unique in every particular — unlike anything and everything that has gone before—despite the adage that there is nothing really new under the sun. With designing placed alongside the other arts on the plane of authorship, the designer would be free to seek germs of suggestion in elements old in the art. So long as he worked out new combinations and discovered unanticipated arrangements that were original with him, he would be entitled to a Government diploma for his design.

Specialization and Originality Encouraged

It is, of course, sheer guesswork to predict when Congress will reform our design protective system, although there is ample confidence in the best-informed circles that the better days are coming. Meanwhile, it is enough for the paper and pulp industry that recognition and investment in the industrial community are on the side of specialization in design. It is rather significant in this connection that in all the crusade of the U. S. Department of Commerce for simplification in industry by the elimination of odd sizes, superfluous varieties, etc., there is no attempt to carry standardization to the environment of the original designs which supply industry with its selling points and advertising expedients. Indeed, the warning that Secretary Hoover recently sounded to American industry to spend more money on technical and scientific research, if it would keep the pace of world competition, is freely translatable into advice to devote more attention to original designing, for the very same reason.

Hope for Protection Against Piracy

Design piracy has been the cancer of industrial designing. It is a malignant growth which it is hoped to cut away by the new system which awaits the O.K. of Congress. And this plague has, as it happens, a peculiarly intimate contact with the paper and pulp industry. Piracy of designs consists of theft of an original design or of simulation of an original design by means of a variation or modification so slight that the trailing design stands as a counterfeit of the original in fact if not in name. The effect of the piracy of designs of brief popular tenure is particularly insidious. Because a pirate, shadowing a promising new design when the samples are first shown to the trade, may have his imitative design on the market almost as quickly as that of the legitimate owner of the design, thereby appropriating a large share of the trade that should by rights go to the design pioneer and further injuring the latter by making his design appear as promiscuous and commonplace in the trade.

Now for manner in which this deplorable state of affairs reacts on the pulp and paper industry. It is obvious that the owner of an original design in furniture or electrical lighting fixtures or musical instruments has a game worth the candle of utmost design entrenchment. He can well afford to pay for a design patent, even at the present cost. He can hold his novelty off the market until his design is enfranchised. In short, his design asset is one for the long pull. Very different is the predicament of the manufacturer of small novelties who must ride to prosperity on the crest of a fad; who has little time in which to obtain a patent, if it is to be effective; and who concludes, in many an instance, that he may as well take chances with an unprotected design rather than pay a heavy fee for doubtful protection.

The plight of the latter users of original designs is of immense concern to the pulp and paper trade because it is in the fabrication of this class of designs that pulp and paper products are used most extensively. Stationery novelties, advertising conceits, all manner of paper utilities from napkins to mothproof bags, and a host of other examples come instantly to mind as in this category. Perfection of dependable arrangements for maintaining monopolies in designs would free all industries of this class

from the slavery of price competition as a sole gauge of battle. A very large share of the purchasing public that cannot be induced to disregard price for the sake of quality might be caught by the lure of distinctive design. Following this new influence through to manufacturing sources, we would have an increased demand for paper and a willingness to pay for superior raw materials that would lend themselves to the execution of innovations.

Congress has been admonished that encouragement must not be given to the broad cause of original designing, at the expense of any industry that lives by ministering to the general lay public, in the latter's applications of design in the household arts and decorative endeavors. For example, there is objection to carrying the principle of monopoly in original design to such lengths, that there would be interference with the commerce in paper patterns for home dressmaking and the traffic in models for paper flowers, lamp shades, etc. That is somewhat beside the question, however, since few advocates of design monopoly desire to exclude others from general conformity to "styles" or "fashions." What is sought is recognition for prowess in designing that will quicken the pulse of all paper-using industries by insuring the rewards of originality.

Factors Determining the Location of Pulp and Paper Mills

Part III—Markets, Power and Labor Supply

By HARRY E. WESTON

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A GENERAL knowledge of market conditions would be essential for anyone who proposed to locate or erect a new pulp and paper plant. In many instances a market for the commodity would be sought prior to the erection of the mill. In this way it is possible to begin manufacturing operations with comparatively little inertia.

It goes without saying, that if all factors are of equal importance, a new plant will locate as close as possible to the market it expects to serve. Since water supply and forests are of such importance in the manufacture of ordinary grades of paper, it has been considered economical to locate the mills near the forests and to transport the finished products to market. Such procedure is particularly true of the chemical pulp plants where the yield of pulp is approximately 50 per cent of the weight of raw material. In fact, any of the various grades of pulp can be easily transported to paper mills located at considerable distances from the pulp mill installations, the paper mills in turn utilizing the pulp as their basic raw material in the manufacture of paper.

Although familiar with the trade, a new firm breaking into the market without preliminary sales work would need a much larger initial investment than a firm for which a portion of the production or the entire production had been contracted. For example, most engineers estimate 20 to 25 per cent above initial investment for working capital. Some manufacturers do not believe that such an estimate is sufficiently high. The manufacturers contend that considerable time is required to place the mill in operation and in developing a satisfactory market for the product or products. Under such conditions they claim that a working capital of 50 per cent of the initial investment is none too high. An engineer familiar with the plans and policies of the management of the new enterprise would be in much better position to estimate the investment required for any given sized unit.

In general, the market for the pulp manufacturer would be paper mills which did not manufacture pulp or were not manufacturing a sufficient supply to meet their demands. The Bureau of Census recorded in the 1923 census of manufacturers that 525 establishments reported as manufacturing paper only, 49 establishments manufacturing pulp only, and 172 establishments producing both pulp and paper. In the same report are included data relative to the production of wood pulp for sale or for consumption in mills other than those in which the pulp was produced. There were 403,064 tons of sulphite fiber, 145,051 tons of sulphate fiber, 16,900 tons of chemical pulp screenings, and 1,746 tons of mechanical pulp screenings manufactured during the same year for sale outside the establishments in which they were produced. The paper market, therefore, was in position to purchase from domestic manufacturers over one-half million tons of pulp.

Offhand it might seem, therefore, that the pulp manufacturer was limited to a comparatively narrow market. This was particularly true to few years ago, but developments in the Rayon industry as well as possible developments in industries which are now

using cotton as their raw material, but might substitute chemical wood pulp cannot be overlooked. Such industries might include the photographic film industry as well as the high explosives industry. It is still a fact, however, that the greatest portion of wood pulp now produced for sale finds its way to the paper manufacturer.

The market of the paper manufacturer would depend very materially upon the kind of product or products produced together with the quantity of this production. The larger portion of the newsprint production, for instance, is purchased by the publishers of daily papers with large circulations. This paper is sold on contract in which provisions are made for the delivery of a definite quantity of paper and this at a fixed price. Contracts are made commonly for one year although in some instances the prevailing contract period may be for five years. The open paper market supplies a large number of the smaller dailies, semi-weeklies, and weeklies. Their consumption is relatively small when compared to the actual newsprint output of the United States and Canada.

The large publishers use roll paper which is shipped to them in carload lots directly from the manufacturer. Such paper might have been purchased from the manufacturer, or through jobbers or sales agents—the jobbers or sales agents acting as middlemen.

Jobbers make a business of purchasing and reselling paper, although in some instances they also may do a commission business. Sales agents on the other hand sell chiefly on commission. Various kinds of paper are frequently carried in stock by the jobbers, although they often specialize in some particular grade or perhaps a few grades. The chief advantage in making purchases through jobbers is largely a question of service. When selling on commission, jobbers contract with publishers, and in turn with manufacturers, either directly or through selling agents. Selling agents might represent several mills or only an individual manufacturer.

Book paper like newsprint is supplied by the manufacturers in either roll or sheet form. A large part of the roll production is used by magazine and periodical publishers, while sheet paper is commonly used by book publishers and for miscellaneous purposes. This paper may be sold on contract or in the open market by the manufacturers or by jobbers.

In addition to the markets already mentioned are those developed by paper converters. A few of the products commonly produced by the converters are paper cups, special absorbent papers, napkins, paper containers of all sorts, paper milk bottle caps as well as bottles, etc. Many other specialties might also be listed.

Power

Power is an item which must not be overlooked when considering a site for a proposed installation. Such an item, if not carefully considered, might prevent the extension of any existing plant.

There are, in general, two sources of power for the pulp and paper mill. The plant might purchase its power, or might operate its own power plant. It is even possible that a mill would produce a portion of its power supply and purchase the rest from a central station.

Whether to use one or the other, or a combination of the two is largely a question of economics. It is true that these considerations would be modified to some extent by conditions peculiar to the plant itself. For example, any chemical pulp plant must have its steam installation, exclusive of the motive power required for plant operation, the steam being required for various process operations. Sulphite, soda, and sulphate cooking operations require large quantities of steam as do the evaporating and causticizing operations in a soda or sulphate mill.

The quantity of steam required for cooking sulphite pulp is much higher than that required for soda cooking. Calculations by Andrews[5] show that a 14′ x 47′ digester of about 16 cords capacity of rossed wood requires about 60,000 pounds of saturated steam per cook, while Sutermeister[6] states that the total in pounds of steam required for a soda cook in a 15-cord capacity vertical digester ranges from 37,750 to 44,250. However, the quantity of steam required in the various operations of a soda or sulphate mill is higher than that for sulphite.

Figures calculated over a period of one month in a large pulp and book paper mill installation with the quantity of steam measured by flow meters might be tabulated as follows:

Pounds of steam per pound of bleached soda pulp	7.78
Pounds of steam per pound of bleached sulphite pulp	6.70
Pounds of steam per pound of paper	7.24

The following table is an estimate prepared for the steam consumption in pounds per 24 hours (exclusive of motive power) for a 50-ton bleached sulphate mill:

Causticizing room	120,000
Bleach room	15,000
Digester room	250,000
Evaporators	292,000
Miscellaneous	75,000
	752,000

Such an estimate shows that approximately 15,000 pounds of steam would be required per ton of pulp.

Although these figures are taken from specific installations or are estimates, they convey an idea as to the approximate quantity of steam that would be required in a plant for either the manufacture of pulp or paper. This requirement, however, will de-

[5] Andrews—Paper, February 20, 1918.
[6] Sutermeister—Chemistry of Pulp and Paper Making.

pend on what portion of the motive power required for driving mechanical equipment is derived from steam.

That source of motive power is desired which will deliver an adequate amount of power for equipment operation at the lowest cost per horsepower per year. The actual power requirement of a pulp and paper plant may vary over a considerable range. This is due, perhaps, to the fact that it would be extremely difficult to find two mills of the same capacity and manufacturing the same product or products of that would be of the same design. It is true that most of the major equipment might be practically identical but there would be many other items which would have to be considered. One plant, for instance, might have taken advantage of a hillside site so that gravity flow of materials could be used, whereas a second installation might be so located that all materials would have to be lifted. Skillful utilization of topographical features will sometimes be of sufficient importance to make the difference between profit and loss in the operation of a plant.

Power requirements must depend, therefore, to a considerable extent upon the requirements of a specific installation. One writer mentions that a pulp and paper mill with a capacity of 100 tons per day of finished newsprint, according to the average of a large number of installations, will require 8,916 total mechanical horsepower.[7]

He also mentions that about 960 additional horsepower must be supplied by the boiler installation for operating digesters, drying paper, and heating in winter. Another writer mentions that a plant making newsprint paper and producing both mechanical and chemical pulp requires from 70 to 90 horsepower per ton of paper made.[8] With an average of 80 horsepower per ton a 200 ton newsprint mill would require 16,000 horsepower. Approximately 80 per cent of this power is required for the mechanical pulp mill.

In general, the following figures would probably prove sufficiently accurate for purposes of estimation.

Mechanical Pulp	65-75 H. P. per ton
Sulphite Pulp	15 H. P. per ton
Soda Pulp	15 H. P. per ton
Sulphate Pulp	15 H. P. per ton
Paper (Common Grades)	10-40 H. P. per ton

Statistics[9] compiled by the United States Bureau of Census and published in the 1919 Census of Manufacturers show that the paper and wood pulp industry of the United States used during that year 8,773,000 tons of coal, 63,000 tons of coke, 2,120,000 42-gallon barrels of oil, and 287,000 of 1,000 cubic foot units of gas. The industry had installed 702,178 primary horsepower, and purchased 237,973. Approximately 25 per cent of the power was purchased and 75 per cent generated. About 50 per cent of the fuel consumption was used for process heating and the remaining 50 per cent for power generation.

The 1923 statistics from the same bureau lists the primary horsepower at 2,178,623 with the coal consumption in short tons at 10,509,595. The following table abstracted from the same report lists the prime movers for the same year by types, number, and horsepower.

Type	Number	Horsepower
Prime movers, total	16,017	2,178,623
Steam engines and steam turbines	3,370	902,878
Internal combustion engines	37	6,689
Water turbines	2,308	882,002
Electric motors driven by purchased current	10,302	387,054
Electric motors driven by current generated in establishments reporting	18,377	597,591
Electric motors, total	28,679	984,645

Labor Supply

The reconnaissance engineer should be familiar with the approximate number of men required to operate the proposed plant and should know, likewise, the quality of labor required for this operation. With such knowledge it would be possible during the preliminary survey to obtain some data relative to sources of labor supply, as well as the type-native, foreign, skilled or unskilled that might be available.

In many of our smaller industrial communities are families that have worked in one kind of industry for years. A number of paper mills, especially those mills manufacturing the finer grades of paper and specialties, are located far from any source of raw material, and would ordinarily be considered poor locations. However, the highest class of labor can be hired in these localities, and this feature alone more than offsets the disadvantage due to location relative to raw material.

The great majority of mills depend upon personal applications as a source of labor supply. The applicants that appear best fitted for the work at hand are selected. In some cases, employment agencies are very useful, as is also advertising. Advertising would increase the number of applications and is effective where an immediate increase of labor is essential.

It is sometimes necessary when a new plant has been located and erected in a new community to obtain all of the skilled labor for plant operation from communities where similar plants are already in existence.

(Continued in next issue)

[7] Paper, April 20, 1921.
[8] Stadler, Paper—February 12, 1919.
[9] Chemical and Metallurgical Engineering, January, 1926.

Lessons in Paper Making

Lesson V—Presses (Crown and Couching)

By HARRY WILLIAMSON
Class Instructor, Champion Fibre Co.

THE question of the amount of crown and couching to be applied to the press rolls is interlocked with many other factors: leverage as discussed in Lesson IV; the density and thickness of the rubber covering; the diameter, width, and speed of the press rolls; the type of felts used, and most vital of all, **the average quality of stock to be run.**

Because of its purely local character, this last factor is the cause of many different opinions as to how much crown should be ground on the rolls, and how far back the press rolls should be couched.

The writer has been employed in many mills and has yet to find exactly the same conditions existing in any two of them. Faced then by many conflicting opinions, each expressed by men of experience, each equally sound, and moreover backed up by successful operation in the mill from which they emanate, it behooves us to get on solid ground by finding a starting point which will be a constant in all mills, from which we can work according to the local conditions existing.

The present generation of papermakers enjoy to a greater extent than ever before the co-operation of scientific investigation in the settlement of their problems.

Formerly, the papermaker had to depend solely on his observation of the **effect** of the press rolls and by costly experiment arrive at the co-relation of the various factors involved.

Today, due to the progressiveness of the machine builders, the manufacturers of clothing—and in this problem of successful pressing, especially to the research of Dr. E. A. Rees of F. C. Huyck & Sons, Kenwood Mills, Albany, N. Y.—we have accurate data at our disposal to aid us in solving our local difficulties.

From this it must not be concluded that the value of the papermakers' practical observations are minimized. Far from it. That comes under the heading of "Quality of stock to be run" and will always be the deciding factor. It means the papermaker now has a rule to measure with.

The final objective of the papermaker in relation to pressing and drying is a finished sheet of paper of a—Even caliper; b—Even finish; c—Evenly dried, obtained at the lowest possible felt and steam cost per ton of paper produced.

The primary necessity for crowning a press roll is the deflection of the roll due to its weight, width and lack of support in the center.

By width is meant the **face** width of the roll and **not** the overall width from the end of the one journal to the other.

The two factors, width and diameter of the press roll will be found to be constant, each in relation to the other; that is, the greater the width the greater in proportion will be the diameter.

As a practical starting point we can thus assess the amount of crown primarily according to the size of the roll involved.

A good, **field** method is to express the face width of the roll in inches, take the cube root of this measurement and let the first two figures of the cube foot represent thousandths of an inch.

This amount of crown, however, is to offset the running deflection of the roll only, with the top press roll set on center of the bottom press roll. Extra crown will have to be allowed according to the leverage weight applied.

Before we can decide how much crown to allow for leverage pressure, we must first decide how much leverage pressure we wish to apply. From this point, the other factors involved must be taken into consideration.

Face width of roll in inches	Diameter of roll in inches	Cube root	Crown required to offset deflection in inches
80	16	4.3089	43/1000
90	18	4.4814	44/1000
110	20	4.7914	47/1000
125	22	5.0000	50/1000
140	24	5.1925	51/1000
155	26	5.3717	53/1000
156	26	5.4959	54/1000
170	28	5.5397	55/1000

The most important of these will give us the key to the others. What will be the average quality of stock to be run? Will the average speed be high, medium, or low?

Which point concerns us most; water removal or felt impression? Will the sheet delivered to the first press be tender or strong?

We will illustrate by two extremes in paper making pertinent to the problem of pressing. A heavy weight book sheet would be composed of very short free fibre heavily loaded and run at a slow rate of speed. Owing to the density or closeness of its forma-

tion and the loading carried, it would have the fullest advantage of water removal by suction on the wire and atmospheric pressure as indicated by the vacuum gauge, to lay the surface fibre. On entering the first press, such a sheet would be tender due to the shortness of fibre and amount of loading, but, due to the freeness of the fibre would carry very little Water of Hydration. The slow rate of speed would allow the paper to spend an appreciably longer time passing the point of pressure as represented by the ultimate juncture of press rolls, paper, and felt. The peripheral speed of the bottom roll being low, there would be less tendency for the water to follow the direction of the roll's rotation.

The opposite extreme, a light weight kraft sheet would be composed of long, well hydrated fibre. The ends of the fibres would be well brushed out into spreading fibrillae to give greater interlocking cohesion and strength. The body of the fibre would be thoroughly hydrated; that is, each fibre will have acquired water as a physical component.

The high rate of speed at which such a sheet is run, requires a tremendous volume of water, which results in an open formation. The high speed light weight therefore, despite the extra hydration of fibre, offers less resistance to the passage of air through it to the suction pumps and actually carries a greater percentage of water to the first press than a closer, freer sheet would.

It must also be remembered that Water of Hydration is actually a physical component of the fibre and requires greater pressure, either mechanical or steam, to remove it than the Water of Suspension Contact which has to be removed from the freer sheet.

In the two examples cited, we see the necessity for very different treatment at the presses. With the book sheet, **heavy concentrated** pressure is not necessary and moreover would injure the formation of the tender loaded sheet.

The stronger, coarser kraft sheet will stand a greater concentration of pressure without injury and also requires it to remove its water content and help lay the fibres.

The term, Concentration of Pressure, involves the two factors: 1—Plasticity or hardness of the rubber covering; 2—The diameter of the top press roll.

The combined weight of the top roll and leverage weight will concave or make a depression in the rubber covering of the bottom roll. The softer the rubber, the greater will this concave action be. The greater diameter of the top roll will have the same effect.

Pressure applied is computed in pounds per square inch across the nip width of the rolls. When the area of the nip is increased as by use of a softer rubber or greater diameter of the top press roll, the concentration of pressure is proportionately reduced.

Assuming the same weight applied, therefore, we can be guided by the following rules:

1—The harder the rubber, the greater the water removal, but the felt will be subject to harder wear.

2—The formation of a tender sheet will be subject to disruption unless protected by the cushioning action of a heavier felt.

3—The softer the rubber, the water removal will be less and the force exerted on the paper and felt will be more gentle.

In relation to the plasticity of the rubber, it will also be clear that piling weights on the levers does not necessarily mean a greater water removal. In fact, by going to extreme, the deformation of the rubber cover is greater thus increasing the area of nip width which in turn increases the tendency of the water to follow the rotation of the roll.

The sum total being less actual water removal, because the water can not be said to be removed until it is actually disposed of in the save-all.

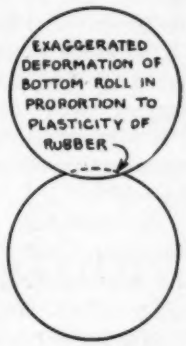


Fig. 21

The capacity of a press must be arrived at by careful observation under running conditions and the indiscriminate piling of weights after that capacity has been reached strongly discountenanced.

In relation to the extra amount of crown to be allowed for leverage weight we must decide: Do we want the pressure concentrated or gentle?

If concentrated then **more** crown must be allowed for the same leverage weight than is the case where the weight is diffused over a wider nip area.

In other words a greater actual pressure applied, the greater the crown required. We may therefore broadly define the requirements of our two examples as under:

COARSER GRADE PAPER

1—Harder rubber which allows greater leverage weight.

2—Top roll couched close to center.

3—A greater crown allowance to offset the last two conditions.

4—A felt that is strong warp and open filling.

The whole combination equals quick water removal at a high rate of speed.

FINER GRADES OF PAPER

1—Softer rubber with lighter leverage weight.

2—Top roll couched further from center.

3—Less crown because the weight is diffused over a greater nip area, and the couching of the top roll has also further removed the arc of contact between the ends of the roll.

4—A more closely woven felt.

This combination gives a less water removal and also less loss of loading material through the saveall,

is easier on the paper and felt, and necessitates a slower speed.

By not observing the question of crown and area of nip width in relation to quality of stock run, we sometimes meet disaster. To use a definite example. Suppose the presses are arranged to suit the requirements of the finer grades of paper, and an order is to be made of the stronger coarser grade where strength and not formation is the paramount specification. The natural tendency is to greatly increase the speed in order to obtain production. The condition of stock would be as outlined for the kraft sheet, hydrated long fibre with open formation carrying greater water content to the press.

If we increase the leverage weight considerably to meet this condition, we also increase the area of the nip width.

This combined with the greater peripheral speed of the bottom roll tends to make the water roll up in the nip resisting the explusion of water from the paper and the felt, thus causing breaks by felt marks.

Also the extra weight applied more than offsets the crown ground; therefore, the edges of the sheet leaves the presses dryer on the edges.

The length of the wet web on entering the dryers is uneven, being shorter on the edges than in the center. As the heat of the dryers shrinks the sheet, the edges become strained, resulting in loss by snapping off at the dry end.

The extra water therefore must be evaporated by steam, and steam is a costly method of drying paper. It must also be borne in mind that hydrated fibre plus open formation **not** subjected to a high concentration of pressure means uneven shrinkage across alternate narrow areas across the web which in turn means piping at the calenders and cockle cuts.

To obtain the best results in salable paper, our increase of speed must be within the latitude of leverage weight allowed, taking as a maximum the amount of weight required to offset the crown ground on the rolls.

Reading Crown by the Felt

The conformation of the weave of the felt under the running conditions, with one exception, is the best indication of the effect of the crown. This exception is the action of the suction applied to the underneath side of the felt before it enters the nip of the first felt.

If the center of the suction box should be cleaner than the ends, as often happens, more suction would be applied at the center, thus holding the felt back at that point and giving a wrong indication of the effect of the crown.

Granted even suction and the stretch roll in line, the conformation of the weave of the felt as depicted by the seam will accurately reproduce the effect of the pressure and driving action of the roll applied at the nip.

Should the crown **not** be overcome by the leverage weight applied, the edges of the felt will drop back and the center lead.

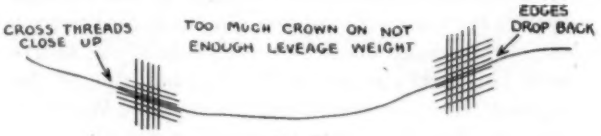


Fig. 22

Should the leverage weight be too great for the crown ground, the center of the felt would drop back and the edges lead.

Fig. 23

This is sometimes loosely explained as being due to the greater distance, as represented by the greater diameter the felt has to travel around in the center than on the edges during one revolution.

If we consider only the **warp** or lengthwise stretch, this is probably true, but the **woof** or crosswise filling threads are more affected by the **driving** action of the circumference of the rolls they come in contact with.

To illustrate. Assume the felt seam to be perfectly straight, and we proceed to tighten up the back side by means of the stretch roll.

We have certainly increased the linear distance, that portion of the felt has to travel to make one revolution, yet the seam will drop back as indicated by the dotted lines.

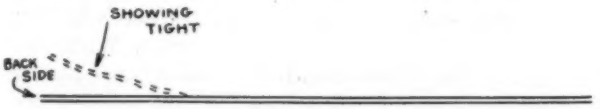


Fig. 24

The **warp** threads have been stretched in greater proportion than the crosswise threads.

What has been gained in length has been lost in width over the same area. Consequently the mesh of the felt is closed up, indicated **tight** by the dropping back of the seam.

Now suppose that we run a leader round one of the high tension rolls covered by this area of felt. By increasing the diameter of the roll we increase the **arc** of **contact** made by the felt over the area, and the **crosswise** threads are **driven** forward, thus opening the mesh.

From this it will be clear it is the **driving** action ot increased **arc** of **contact** of the crosswise threads we must consider rather than the fractional linear distance represented by the **greater** circumference.

When this is thoroughly understood by the operator, much unnecessary strain and wear of felt can be saved. Let us assume a press with even suction

and the crown so accurately ground that a straight line nip is formed when 50 lb. weights are at the ends of the levers. Under these conditions, the seam of the felt would show straight. If we decrease the leverage weight by 25 lbs., the driving contact of the bottom press roll is proportionally decreased at the ends, and the edges of the felt will drop back tending to close the felt mesh.

The water has therefore greater difficulty in passing through the felt and less pressure to help force it through. Should a break occur by felt mark, the tendency is to further tighten up the felt, or further decrease the leverage weight applied.

Either action only results in a temporary cure, and does not remove the **cause** which is "the closing of the felt mesh by loss of the **driving power** of arc of **contact**" of the press rolls at the ends, thus allowing the felt edges to drop back.

The very life of the felt is pulled out of it by such repeated action so that in order to get service we can be guided by the following rules. The object is to keep the felt open.

1—**Excess tension** on the **warp** threads without a corresponding driving forward of the cross threads means increased length and decreased width which **closes** the felt mesh.

2—If by decreased leverage weight, the equivalent of too much crown, we lose the **arc** of **contact** on the press rolls, replace it by the use of leaders on a high tension felt roll.

3—When lining up the seam, drive the cross threads forward **first** and then if necessary apply **tension.**

Tax Savings Through Depreciation on Your Patents

Some Recent Rulings of More Than Ordinary Interest

By M. P. SNOW
Public Accountant and Tax Consultant

ONE of the very recent decisions to be made by the United States Board of Tax Appeals permits a concern a value on its patents twice as high as that granted by the Federal income tax bureau. This company was permitted to use a value of $100,000 instead of $49,315 which the tax bureau proposed to allow.

A great many people think of patents as something applying only to machinery. However, there are few industries who are without patented processes, formulae, equipment or machinery of some sort.

Remarkably large amounts have been saved by taxpayers through using their rights to depreciation on their patents. In the case which I just mentioned, the valuation placed on the patents by the taxpayer is based on an offer made to buy the patents in 1912, which the concern refused.

I know that there are a large number of manufacturers who obviously are not aware that the tax regulations plainly permit a depreciation deduction for patents. In one case that I know of, a concern bought patents back in 1914 for something like $200,000. It carried the patents on the books without knowing that they could be depreciated. The officers of the company were very much surprised when they were told that they could take depreciation. On the basis of the $200,000 cost of these patents the concern obtained a yearly depreciation deduction of $20,000 because the patents were seven years old when they were purchased. Patents have a life of 17 years but these patents were 7 years old when they were acquired, so there was a remaining life of 10 years and the company could, therefore, take 10 per cent or $20,000 depreciation every year. Now if these valuable patents had been purchased before March 1, 1913, perhaps a much higher depreciation allowance could be obtained on the basis of the actual value of these assets as of that date. In computing your depreciation allowance according to the tax laws you may use the cost of the patent or its fair market value as of March 1, 1913.

At any rate the allowance for depreciation—based either on cost or on the market value just mentioned—should be spread over the life of the patent since its grant; since you acquired the patent; or since March 1, 1913, according to the circumstances.

If you acquired your patent or patents direct from the Government, you should capitalize the total of your disbursements in obtaining them. The various government fees such as cost of drawings, experimental models, attorneys' fees, etc., should be set up as part of your cost.

A very large number of concerns have bought patents, paying for them in stock or securities. If you did this, the cost to you is the fair market value of the stock or securities at the time of purchase. The tax regulations make it plain, however, that if you hope to be allowed to take depreciation on the basis

of a fair market value, you must show affirmative and satisfactory evidence of this value.

Of course patents are acquired by various means. Sometimes they are received as a gift—at other times, stock is issued to pay for them. In still other instances the patented process or machinery is worked up right in the company. In any event, however, it is not the **cost** of the patent which we will consider here. If you use cost as the basis of depreciation of your patent, you do not face much of a problem. It is when you try to arrive at a **value** of your patents that you ordinarily encounter difficulties. But since the valuation method of figuring depreciation often permits of large tax savings as compared with the use of cost, it is this method which it will pay us best to consider here.

Most of the patents that I know about were acquired before March 1, 1913. In other words, in almost all of the patent cases with which I have come in contact, the March 1, 1913, value is possible because they were acquired before that date and in most of these instances the March 1, 1913, value is much higher than cost and is therefore worth going after from a standpoint of tax saving.

Bear this in mind in connection with all tax matters, however. The only case where an **appreciation**—that is, an **increase** in value over cost—is recognized in figuring taxable income is where such an increase in worth has occurred before March 1, 1913. This date of March 1, 1913, marks the effective date of the first income tax law and taxpayers are permitted to use the value as of that date in preference to cost, if they wish. The only instances where you can use a value different from cost after March 1, 1913, in connection with your patents is where you have acquired these patents by gift—in other words, where there is no cost. Then a value may be set regardless of the time received.

To be able to use a value of a patent as of March 1, 1913, for depreciation purposes is to save thousands of dollars in taxes, in a great many cases. A patent which you acquired for little or nothing may be worth hundreds of thousands of dollars as of March 1, 1913.

Take the case ruled on by the Board a short time ago where a taxpayer was permitted to use a value of $850,000 and allowed to take depreciation of about $85,000 a year in depreciation. The Commissioner of Internal Revenue, who runs the Federal Income Tax Bureau, wanted to allow a valuation of about one-half this figure, but the Board gave the taxpayer the right to use the above figures.

Now the actual **cost** of this patent was only nominal. It was acquired in 1906 at very little expense.

Hoskold Formula for Determining Value of Patent

To go into this decision a little bit farther, let me say that the tax bureau—that is, the Commissioner of Internal Revenue, representing the tax administration of the Government attempted to have this particular taxpayer use a method for determining the value of his patent, known as the Hoskold formula. This is a formula which has been used by a great many taxpayers in arriving at the valuation as of March 1, 1913, when there has been some difficulty in determining just what was the value as of that date. The Board turned down the Commissioner in this case in permitting him to use this process in arriving at the valuation. But it is interesting to see what this formula is because it has been recognized by the tax bureau. The Hoskold method, as used by the Commissioner, is about as follows:

In the case of this present, taxpayer, the Commissioner first determined that his average net income at March 1, 1913, was $100,000 and that the average of net tangible assets employed in the business at that time was $200,798. The Commissioner assumed that 8 per cent was a fair return on the tangible assets (which in this case means assets excluding the patents) employed in the business at that time and he, therefore, allocated earnings of $16,063.85 to tangible assets. The difference of $83,936.15 he determined to be the average earnings of the patent at March 1, 1913.

At that time the patent had a remaining life of 10 years. The Commissioner, therefore, fixed the value of the patent at that time at a sum which represented the present worth of $83,393.15 received annually for ten years. In applying the Hoskold formula the Commissioner further assumed that a purchaser of this annuity would expect to recover his investment through a sinking fund to which annual additions would be made and the sinking fund invested at 4 per cent, interest compounded annually. He further assumed that a prospective purchaser, in addition to recovering his investment through this sinking fund, would demand a return of 10 per cent, annually, on his investment. Then, with these three bases, that is—an expected annual earnings on the patent for ten years at March 1, 1913, of $83,936.16; a sinking fund at 4 per cent; and an annual current return on the investment of 10 per cent, the Commissioner arrived at a value by applying the Hoskold formula to these bases, amounting to $457,939.70. On this basis, a depreciation deduction of 10 per cent of this value would be $45,793.97, and the Commissioner recommended that this be allowed to the taxpayer as a deduction.

Now, as I have stated, the Board did not approve the Hoskold formula used in this case. It gives as one of its reasons for not approving, the fact that the taxpayer claimed the patent had a fair market value at March 1, 1913, of between $1,250,000 and $1,500,000.

Then, further in its opinion, the Board states that in determining the value of assets at any specific time the valuation should be based on facts known at the time. Subsequent earnings cannot be used in the determination unless from past experience or

known facts such future earnings might reasonably have been anticipated. The Board states plainly that it is convinced that such was the situation in this case.

The Board points to the fact that the taxpayer, long prior to March 1, 1913, laid plans to enlarge his plant to a much greater capacity, purely on the basis of the increased use and value of these patents. These plans were actually consummated in the latter part of 1913. Taking all the facts into consideration, the Board denies the Commissioner's valuation of $457,939.70, and sets a valuation of $850,000—almost double that allowed by the Commissioner, and the Board permits an annual exhaustion for the years in question of $80,563.49.

While it cannot be said definitely what the Board's attitude will be in patent cases, it appears that the Board is not going to be bound strictly by any particular formula nor by any actual offerings made prior to March 1, 1913. Here is a case where an offer was made after March 1, 1913—in fact was made in 1916, and the Board apparently did consider this offer, together with the earnings subsequent to 1916, in the light of known facts and the past experience of this concern prior to March 1, 1913.

Pointers for the Engineer

By W. F. SCHAPHORST, M. E.

Novel Heat Saving System

PAPER mill engineers will doubtless be interested in the new power plant system developed by G. & J. Weir of Glasgow, Scotland. A diagrammatic arrangement is shown herewith. In this system, as will be noted, a low pressure boiler is placed in the uptake of the main boiler. The high pressure steam passes into the high pressure end of the steam turbine while the low pressure steam may enter the turbine at about atmospheric pressure, or even lower, and is utilized in the low pressure stages. The arrangement of feeding, feed heating, extraction, and everything else, are carefully worked out. This system has the following advantages:

1—The low-pressure boiler acts as a feed-heater, a steam generator, and a feed reservoir in one.

2—A closed and de-aerated feed system is obtained.

3—The heat absorbing capacity of the low-pressure boiler is not limited to what can be taken up in feed-heating.

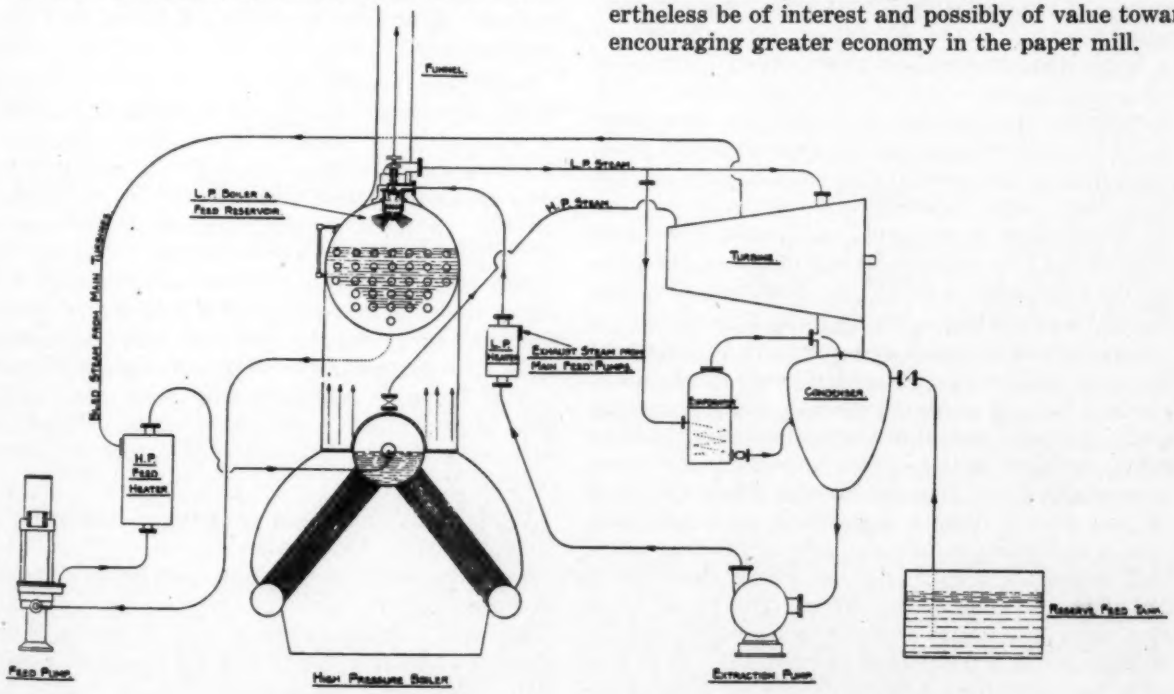
4—The main boiler can be forced without serious loss of efficiency, extra load being taken up by the low pressure boiler.

5—The absorption of auxiliary exhaust steam in the feed water is made possible to the fullest extent.

6—The whole feed system is under low pressure.

7—No brickwork, consequently minimum weight and minimum gas leakage.

While a system of this sort is of less advantage to paper mills than to plants where low pressure steam is not usable in processing work, I believe it will nevertheless be of interest and possibly of value toward encouraging greater economy in the paper mill.



Editorial Comment

By WILLIAM SIBLEY

Police Up!

WHILE in the army we were drilled, in no uncertain fashion, on the merits of good housekeeping. The weekly inspection of the Colonel was a dreaded event, for a single missing button, or the tiniest spot of grease was sure to fall within the range of his observation—with a result that was not soon forgotten. Slovenliness has no place in military life, for the slovenliness in physical make-up engenders slovenliness in mental structure, and the latter, in war, sometimes leads to a little wooden cross, marked with a "dog-tag," leaning a bit to the leaward since the previous night's rain.

All of which was called to memory by a recent visit to a large industrial plant in Ohio. While on a hasty tour of this plant we noted, with some amusement, a large 14-foot sign over the door of the shipping department which read: "This is the dirtiest department in the plant." In answer to our query, the superintendent silently lead us to the assembling department where, perched over the entrance was a similar sign reading: "This is the cleanest department in the plant." He then went on to explain that on Saturdays at twelve, the factory superintendent in company with an official from the general offices, made a tour of the entire establishment for the sole purpose of inspecting the place for neatness and good housekeeping. To the department that showed up as being the cleanest and more orderly went the "clean" sign, while that department which proved inexcusably dirty or disorderly had the imposition of the "dirtiest department" sign for an entire week. According to the superintendent, the men of the institution found considerable pleasure in hunting out the dirtiest department" on Monday mornings, then "riding" the men for their slovenliness throughout the remainder of the week. The idea, according to the superintendent, "works wonderfully well."

Good housekeeping is as imperative to industrial life as to military life. Disorderliness contributes to accident hazard, costly production and low morale, while neatness and cleanliness invariably tend to reduce accident totals, effect important economies in production and increase over-all efficiency. It is no easy task to keep a large plant spick and span, year in and year out. Particularly is this true where bulk materials are handled or where there is an abundance of maintenance work. The beater room of a paper mill would probably never be comparable in neatness to a tile-floored power plant. It is possible, however, for a beater room to be as clean for a beater room as it is for a power plant to be slovenly in its particular category. Logical rules, rigidly enforced, with suitable penalties for infraction thereof or appropriate reward for adherence thereto, will do much to keep any plant in orderliness. The returns from such effort are always sufficiently high to justify the work.

Too Many Warnings

WITH Congress, state legislatures and city councils seemingly on a piecework production basis as regards new laws, there is no one who will not agree that too many laws neutralize the value of all law and contribute to the non-observance of needed laws or to direct law breaking. Exactly the same condition prevails in industrial plants. Too many rules and regulations, many of them obsolete, will neutralize the purpose they were originally intended to serve. Particularly does this apply to safety warnings and danger signs.

Not long ago we visited a large plant that seemed literally plastered with red, glaring "DANGER" signs. It was very apparent that in some places these signs were much needed. At other places, however, there seemed little or no danger and we couldn't but feel that the presence of such signs in places where there was no danger tended to make all such warnings mere fixtures on the walls and thereby serve no good purpose.

Every management should do everything possible to make equipment and methods as nearly fool-proof as possible. The installation of guards and safety devices should always be made at the time the machine is installed, then kept in a state of good repair; but the posting of warning signals or the creation of rigid safety rules where neither is needed will nullify the good effect of such warning and rules where they are necessary. The idea that a worker will at all times observe and obey warnings is fallacious. Human nature is such that constant repetition of sombre suggestions will make such suggestions merely a part of the daily routine. Such callousness may, and frequently does, lead to serious results.

While human nature is pretty much the same, individuals vary. This variance causes different reactions to the profusion of safety rules or danger signs. In some employees timidity and fear may be created —and fear is known to be a fruitful source of accident. No operator should fear his machine or operation. If labeling the machine with a danger sign

—— on Timely Subjects

has such an effect, then the warning has increased rather than decreased the accident hazard. Fear that is mental has a way of leading the frightened into danger that is physical. Furthermore, with the mind partially filled with timidity, there is less room for constructive production thought, with the result that both quality and quantity of product suffers.

The elimination or modification of every unnecessary safety rule and the subtraction of all but the vitally important danger signs will, if coupled with constant educational effort, do more to reduce accidents and develop respect for necessary rules than anything else. The educational effort rests largely with the foremen and department heads. Every foreman should be personally competent in the work he is supervising. Knowing every angle of the work he can instruct employees in the easiest and safest methods, at the same time teaching the dangers that may lie in machine operation and how they may best be avoided. Eternal vigilance, painstaking instruction, and, at necessary times and places, the strict enforcement of regulatory measures, is the three-ply combination that makes for reduced accident records and better production.

Suggestion Systems

ONE of the best signs of co-operation between the worker and his employer and one of the best means toward minimized costs and increased production, is a healthy, flourishing suggestion system. The man at the bench or at the machine is the logical person to suggest improvements in product or method, and these he will give if properly encouraged or afforded the proper incentive.

The experience of many executives show that some of the most important contributions toward the perfection of a product, the simplification of methods, or the lowering of the production costs, have been made by employees. Such suggestions have covered a wide range but the majority, however, fall in the following classifications: 1—improvement to methods; 2—increasing of production; 3—reduction of accidents; 4—improvement in appearance or quality of product; 5—suggestion for the advertising of the product; 6—increasing co-operation in the plant; 7—salvaging or reclaiming waste materials.

Every suggestion system must of a necessity be adapted to fit particular conditions. Larger institutions may find it profitable to maintain a suggestion committee, the members of which will give a certain portion of their time to following up the various ideas submitted and passing on their advisability. Smaller plants may have a "suggestion manager" whose duty it will be to consult with the various department heads on the desirability of suggested changes.

Because no suggestion system will stand on its feet, particularly at the start, the chief requirements for success is the proper selling of the idea to the men. This should be done before the plant is adopted. In every case, furthermore, some form of incentive should be established; the most commonly employed being a cash award established on a sliding scale and made payable in accordance with the importance of the suggestion. Suggestion boxes are obvious necessities, all of which should be made attractive, with space above for a small bulletin board or a receptacle in which blank cards can be kept. Such boxes should be kept locked at all times.

Perhaps the principal ingredient of a successful system is confidence. Employees must be made to feel that if they give their best in production and suggestion they will be rewarded accordingly. Employees should be brought to understand that patentable ideas will always be considered the property of the originator—that the company expects to pay for everything they get and use.

Suggestion systems will never sustain themselves, even after inauguration. Many elaborately planned systems have failed because of lack of support or because of the failure to appreciate the necessity for the underlying confidence. So prolific are the pitfalls in the operation of such systems that many firms have abandoned the idea, after one or two miserable failures, with the result that one of the most fruitful means for profit remains unavailed. In nearly every plant there is the "suggestion pest" who offers thoughts on everything and anything that comes into his mind. Then, there is the everpresent, half-informed, fantastic suggester who nurses a grouch because he fails to win an award. Such individuals can be given proper reading matter or tactful coaching that will bring them to a better understanding and appreciation of the philosophy of the thing and change them from "sore-heads" and "pests" to valuable assets.

No successful suggestion system has ever been built up without constant cultivation and close attention on the part of the management. Failures, in nearly every case, are due to a lack of understanding of this fundamental principle.

Fall Meeting of T. A. P. P. I.

Three-Day Session for Discussion of Mill Problems, Visits to Paper Mills and Industrial Plants

FIVE years ago a fall meeting of the Technical Association of the Pulp and Paper Industry was planned to take place at Washington on October 18, side excursions, meetings and mill visitations being arranged for York, Spring Grove and Philadelphia, Pa., and Wilmington, Del. William S. McClellan was chairman for the York gathering, with young Phil. Glatfelter, Henry Schmidt and others as aides. A most ambitious program was arranged. Headquarters were to have been at the New Willard Hotel, Washington, and the Bellevue-Stratford, Philadelphia. It was the York and Spring Grove members who developed the plan and it was they who felt keenest disappointment at the decision of the executive committee of Tappi to hold no fall meeting that year. But "the whirligig of time brings in his revenges," and the long postponed meeting took place at York, Pa., on Tuesday, Wednesday and Thursday, September 14, 15 and 16, 1926. While there were opportunities for excursions to Washington and Philadelphia those who took advantage of such opportunities acted as individuals, there being no provision on the official program of meeting for trips of this kind.

Program Was a Full One

Although more restricted in scope, the program of this year's meeting was better adapted for the transaction of such business as the discussion of mill problems, reading of professional papers and visits of inspection to pulp and paper mills, industrial plants and engineering establishments than the one that had been drawn up tentatively for the meeting that was abandoned in 1921. There was some crowding of events, it is true, but the committee of arrangements must have been well pleased with the way things worked out. Interspersed with the educational features of the meeting were various social functions as luncheons, dinners, smokers and games that kept everybody constantly occupied. It is greatly to the credit of President George K. Spence that he succeeded in starting all events on schedule time. The business meetings were opened promptly on the hour agreed upon and laggards who failed to meet the busses and other conveyances provided to take visitors to meetings at the York Country Club and points at a distance from hotel headquarters were obliged to depend on latecomers like themselves who owned motor cars, or to hire taxis. It was prominently set forth in the program of meeting that "Time is limited; please be prompt; watch the Bulletin Board."

Special Papers and Apparatus

Apart from two contributions by the staff of the Forest Products Laboratory at Madison, Wis., one by a member of the research staff of the Mead Pulp & Paper Company and another from the Research Department of the Oxford Paper Company, there were no papers of direct mill interest presented. The new clarifier and thickener which has been recently placed on the market by the Harding Company, of York, was described and illustrated and it was afterwards seen in operation at one of the local plants. There was also an illustrated paper by a representative of the Eastman Kodak Company, on a new illuminating equipment for the microscopy of paper surfaces, which held the close attention of an interested audience by reason of the speaker's excellent command of a difficult subject in optical mathematics.

Visits to Industrial Plants

Despite the paucity of set papers and reports at this meeting, the program provided a number of interesting and sometimes informing discussions of mill processes, which included references to methods of washing chemical pulp, the recovery of waste liquors and products of distillation, refrigeration processes, efficiency of stock savers, and the pressing subjects of stream pollution and deinking and washing reclaimed paper stock. The local industries of York are quite diversified in character, ranging as they do from pulp and paper to refrigerating and ice-making machinery, through hydraulic turbines, pulp thickeners, white water clarifiers, roofing papers, asphalt shingles, printing, wall paper, paperboard and building papers, and the visits to mills and engineering establishments constituted a real educational feature of the meeting.

Social Features

The visitors were kept constantly on the go. If it was not a mill or plant visitation that called for attention, it was a luncheon or dinner at the Country Club or a visit to Spring Grove, or York Haven, involving long trolley or bus rides. The unvarying courtesy and generous hospitality of the local manufacturers met with unstinted praise on all sides. The series of social events ended with a trip to the Battlefield of Gettysburg which lies twenty-eight miles southwest of York, a most inspiring visit which brought up many memories of schooldays and history lessons, for there was no one in the party old enough to have participated in this decisive battle of the Civil War.

The Gettysburg trip took place on the afternoon of Thursday, following a luncheon and lawn party at the attractive residence of H. P. Glatfelter in the outskirts of Spring Grove. The estate forms a great park of rolling ground, with terraces, pergolas, flower beds, orchards and vegetable gardens. One of the ornamental features of an extensive lawn is a lily pond stocked with gold fish. The house is one of great architectural beauty, and it and the grounds were greatly admired.

Local Committee Met Trains

The members began to arrive in York with the early trains on Tuesday, September 14. Attached to the midnight train for Philadelphia leaving the Pennsylvania station, New York, at midnight on Monday, were two special Pullman cars which brought the New York and New England members to the place of meeting in time for breakfast at The Yorktowne before the proceedings opened on Tuesday morning. Several members of the local committee, headed by P. H. Glatfelter and William S. McClellan met all trains on arrival and conveyed the visitors in automobiles to hotel headquarters, where, after breakfasting and registering, a business sitting was held at which reports of committees were presented and mill problems discussed.

FIRST BUSINESS SITTING

President George K. Spence opened the proceedings of the fall meeting in the ballroom of the Yorktowne Hotel at 9:30 o'clock on Tuesday morning, September 14, with a few well chosen words of welcome and greeting. He then announced that reports of standing committees were in order and called upon W. E. Byron Baker, chairman of the Cellulose Committee, for an outline of what the committee had accomplished and the work they were engaged in.

The Chemistry of Cellulose

Mr. Baker said that the committee was endeavoring to find some chemical method of ascertaining the value of a pulp for various purposes. There was no single chemical test that could be applied to the evaluation of a pulp but an effort was being made to work out a method and the committee hoped to make a report of their findings at the annual meeting next year. He said that interest in the constitution of cellulose and the reactions of the substance was growing and as proof of this he pointed to the crowded sessions of the sectional meeting of the Cellulose Committee at the last annual convention when one hour was alloted to discussion and it took three hours to complete the program. Some of the problems before the committee included a determination of the effect of substances associated with cellulose, degradation products, etc., in the

ageing of paper, Mr. Baker contended that if progress was to be made in the industry a more detailed knowledge of the characteristics of cellulose must be made available. He referred to the interest displayed by manufacturers of pulp and paper in the cellulose symposium of the Canadian convention of chemists last June, instancing this as proof of the attention now being given to research in cellulose chemistry by practical men.

Boiler Room Questions

In the temporary absence of R. W. Leeper, chairman of the Heat, Light and Power Committee, Secretary W. G. MacNaughton responded. He said it was the intention of the committee to continue work begun last year on high pressures in the boiler room and to give more consideration to power requirements in the paper mill, particularly in regard to the power requirements for papermaking, as based on horsepower per inch of width.

D. V. Lowe, chairman of the Committee on Coated and Processed Papers, was absent, but President Spence said he had received a letter from him promising a good report for the annual meeting.

Refining Groundwood Screenings

The Committee on Mechanical Pulp, C. K. Andrews, chairman, had no report to present, Secretary MacNaughton gave some particulars of what was being done by the committee which was concentrating attention on the refining of groundwood screenings. At present 3 per cent of the groundwood goes out through the sewer but refiners are coming into more general use, particularly among the western mills where all screenings are refined to make good paper. Mr. MacNaughton mentioned some of the things he had seen on a recent tour of mills. At the Abitibi mill in Iroquois Falls, Canada, use was being made of a Bauer refiner as well as a Voith refiner. In some mills all screenings are used in the manufacture of paperboard, as in the mill of the Consolidated Water Power and Paper Company, at Wisconsin Rapids, Wis. At the Minnesota & Ontario Paper Company's mill in International Falls, Minn., Insulite is made from groundwood screenings, after defibering and lapping. In a number of cases where screenings were formerly wasted the savings were considerable. The amount of screenings would be inconsiderable in some mills if more care were taken in the dressing of stones, he said.

Official Methods of Testing.

For the Paper Testing Committee, B. W. Scribner, chairman, presented a written report in which he mentioned the nine methods proposed by the committee for sampling and conditioning paper as well as estimating its fiber composition, bursting and tensile strength and for the quantitative determination of casein coating, of paraffin in paraffin paper, and of rosin and active sulphur. Some of these methods were published in THE PAPER INDUSTRY for August, 1926, on page 810.

Mr. Scribner said that as originally planned the formulation of proposed methods was in charge of subcommittees, each dealing with a different branch of testing and appointed by the chairman of the committee, the methods being afterwards considered by a main committee consisting of the chairmen of the subcommittees. This plan was abandoned as too time consuming, and the formulation of methods was now in the hands of the chairman of the committee with the assistance of committee members having special knowledge of the subjects under consideration. The methods as drawn up are submitted to all members of the committee for approval or amendment. When practically unanimous approval is obtained the methods are placed before the members of the association to be voted on.

Work in Hand

Mr. Scribner mentioned the work now in hand which will shortly be put to a vote. This includes methods for determining the weight and machine direction of paper, and the quantitative determination of starch. Methods for determining thickness, tearing strength, as well as qualitative tests for rosin, glue, starch and casein are under consideration. The committee contemplates a complete revision of the paper-testing section of Volume V of The Manufacture of Pulp and Paper.

Secretary MacNaughton instanced the value of paper testing as a means of control during processes of manufacture. In mills recently visited by him, he had seen paper as it came off the machine followed by an inspector who made note of its basic weight, formation, color, etc. So exacting are some of these examinations that they call for the use of an Eastman Colorimeter and in some cases an Ingersoll Glarimeter.

Work of the Materials Testing Committee

M. A. Krimmel, chairman of the Committee on Standard Methods of Testing Materials, reported verbally. He said that a new committee had been appointed at the annual meeting last February to supervise the work of the various committees whose methods and standards might conflict. The Committee on Standard Methods of Testing Materials will endeavor to co-ordinate the work on testing and to this end will get copies of reports made by other committees as issued for consideration. If it finds for example that the Committee on Paper Testing is at work on a method that might be considered best by the Committee of Standard Methods of Testing Materials, the suggestion will be made that the work be taken over by it. The committee proposes to revise eighteen of the existing methods of testing paper and papermaking materials.

W. S. McClellan, chairman of the Soda Pulp Committee, made a brief report of progress, saying that no formal statement was available at this time.

Kraft Committee Active

R. H. Stevens, chairman of the Sulphate Pulp Committee, was absent and Secretary MacNaughton explained that the committee was developing a comprehensive program of work dealing with salt cake specifications; with methods of washing sulphate pulp, as well as studying ways whereby a sulphate mill could determine the quality of the pulp made. He said the effort would lead them to know what was hard kraft pulp, what was was soft kraft pulp and what was in between. He expected the committee to present next February a more comprehensive report than any that had been given in years previously.

G. P. Genberg, for the Sulphite Pulp Committee, of which he is chairman, said the committee was working to develop uniform methods of cooking, as well as standard methods of testing pulp, and methods of utilizing sulphite waste liquor as fuel. He said that a questionnaire wold soon be sent out to members of the association and hoped for a liberal response.

The Training of Beginners

Martin L. Griffin, chairman of the Committee on Training in the Industry, reported verbally. As instancing the growth of technical education, he commented on a set of examination papers which had been sent out by the Institute of Industrial and Domestic Arts of Gardenvale, P. Q., which contained a series of questions, many of which were beyond his ability to answer. He thought it would be an admirable thing if a travel course through a pulp and paper mill could be provided, with instructors selected from members of the Technical Association. Adverting to a certain lack of contact between the technical schools and the industries he said that learning and doing should go hand in hand. This had been found feasible in colleges like the Pratt Institute, Brooklyn, N. Y., and by the Ohio State University, both of which had succeeded in effecting close co-operation with the chemical and engineering industries. The president of the Lithographers' Association had told him that the lithographers who had nibbled at the subject for a great many years had finally got together a fund of $700,000 which was to be used in furthering vocational training.

Mr. Griffin deplored the lack of trained executives in the industry and said that if members of T. A. P. P. I. aimed at executive positions they must show themselves to be qualified to fill them. The Superintendents' Association had taken steps to remedy conditions and good results might be expected from their efforts to bring about more systematic training of workers in the mills.

Education and Training

Secretary MacNaughton pointed to the difference that exist-

ed between vocational education and training in the industry. A large majority of the newer members of T. A. P. P. I. were recent graduates in chemistry or mechanical engineering who desired to make contacts with pulp and paper mill work. He called attention to the fact that many of the original members of the Technical Association were now mill managers or executives. In order to improve their status it was necessary for men to familiarize themselves with conditions in the mills where they were employed. Recently he had been asked to recommend a man who was capable of taking charge of technical control in a mill, but it was difficult to recommend a person for such a position who was not familiar with the particular operations in a given mill.

The Committee on Training in the Industry, Mr. MacNaughton said, would like to see mill executives begin the training of men in different departments of the mill so that they might advance to take charge of technical control in a logical way, learning and earning as they went along. He instanced the Lincoln Pulp and Paper Company, of Merriton, Ont., where a man began in the laboratory and was passed through the different departments of the mill as a worker. If no aptitude was shown by such a man for the work in hand he was soon dropped from the payroll.

College Men Easily Daunted

Joseph H. Slater gave his experience with men who took up practical work in the mill on leaving college. He had found that they usually lacked determination or persistence, were daunted by difficulties and usually gave up the job before they got fairly started. He said that few would be found to question the need for increased education and training in the paper industry. There was a lack of competent groundwood men and he knew of sulphite mills that had vacancies and were looking for men to fill them. If a college-trained man should make up his mind to stick it out for a period of eight or ten years, he would be a success, as there were numerous opportunities for advancement which might be improved by men who had the courage to overcome initial difficulties.

Philip DeWolf spoke of the systems of promotion followed by concerns with which he had been connected, such as the Sales Bleachery and Du Pont organizations, which depended on special training of the individual in the promotion of employees to higher posts.

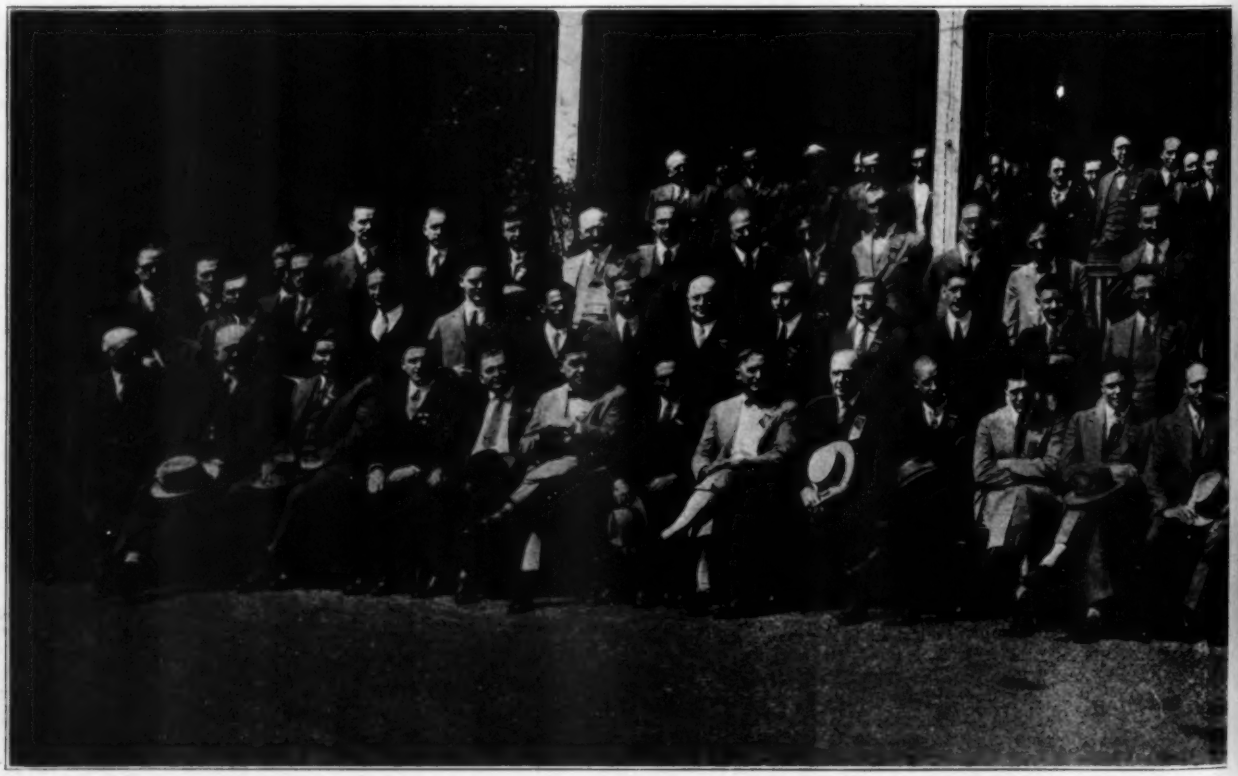
Proposed Discussion of Training and Promotion

On this question of training and promotion, Mr. Griffin suggested that arrangements might be made for a general session at the annual meeting in New York at which systems of training and promotion could be discussed. He also recommended to obtain a speaker competent to discuss the subject for a talk at the annual banquet next year.

Contact with Technical Schools

President Spence expressed his pleasure at the turn which the discussion had taken, saying that a wonderfully good subject had been opened up. He had conducted a training school for men at the mills of the New York and Pennsylvania Company for a number of years and his graduates were to be found occupying executive positions in many mills throughout the country. He thought it would be a good idea, as suggested once by Professor Walker at the Massachusetts Institute of Technology, for a group of mills in the paper industry to select a man and pay him an adequate salary to visit the various technical schools so as to get in touch with likely men who could be taken in and receive mill training. He recommended that all literature issued by T. A. P. P. I. be brought to the attention of the deans of technical schools throughout the country in order to acquaint them with what the association was doing and in this way perhaps arouse the interest of educators in the technical problems which are under study in the mills.

George D. Bearce, chairman of the Committee on Waste in the Industry was called upon for a report. After some references to the work of Secretary MacNaughton in his recent tour of mills, where Mr. Bearce said the secretary had indulged in a daily talk on preventable losses by waste, he made the point that every mill should know what is being actually lost through the passage to the sewer of fibers and fillers, it being necessary as a basis for constructive work to know the amount of waste, pound for pound. Everybody was familiar



Members of the Technical Association in front of the York

he said, with the so called closed system for recovery of waste materials, by which all water was returned to use with the exception of a trifling amount. In regard to waste sulphite liquors, research work was now being conducted to determine the availability of the evaporated liquor for use as a fuel, or as a source of by-products. Four different experiments were under way, but the main problem was how to evaporate the liquor in an economical way so that the mills might at least get back as much as they had invested in the operation of a process.

General Discussion

Following reports of committees a general discussion took place on methods of washing chemical pulps, utilization of products of distillation and the advantages of refrigeration in pulp and paper manufacture. In opening the discussion President Spence inquired if a representative of the Oliver Continuous Filter was present, but Mr. Noble had not arrived at that point, and Mr. Spence accordingly reviewed some of the improvements in washing and fiber recovery processes that had been affected at the mills of the New York and Pennsylvania Company, where batch filters of the Vallez type were used. The continuous filters were not so effective as save-alls, batch filters being regarded with more favor in the reclamation of fiber from waste water. Search has been made for a washer to replace the worm washer and decker in sulphite pulp work. The continuous filter was tried, but this was not so effective in catching the fibers in water coming from the deckers; a save-all or filter on which a mat could be formed was needed for this purpose. Stock coming from the decker or worm washer was often colored and a continuous filter should be used to wash out the color. In soda mill work a batch filter of the Vallez type was to be preferred, as this was more or less a continuous filter.

Washing and Extracting Soda Pulp

In washing pulp, as was pointed out by Mr. MacNaughton, the aim was undoubtedly to get back as much of the chemicals in solution in as concentrated a form as possible. The use of the continuous filter in the washing of soda pulp was the standard practice in most mills, the suction applied to this filter taking away the black liquor with a maximum recovery of soda. As to sulphate mills, the general practice was to discharge the pulp into a diffuser with a series of four or five diffusers for each digester, the washing being done by passing water through them.

Screw Press for Sulphite Extraction

In regard to sulphite pulp the method of washing in a blow pit is generally recognized as the least efficient of any, since uniform washing was difficult owing to the tendency of the pulp to settle in layers that were denser in some parts of the blow pit than in others, the denser parts remaining unwashed. If any complete recovery of waste sulphite liquor was to be effected, it would be necessary to revamp the sulphite mill along the same lines as soda and sulphite pulp mills. At present it was not possible to recover more than 60 per cent of the waste liquor by draining from the blow pits. He spoke of the use of a screw press for the extraction of spent liquor from pulp before it was washed whereby pressing the pulp to 30 per cent dry, 90 per cent of the waste liquor would be obtained in its most concentrated form and thus make it easier to wash out the last traces of liquor from the pulp. He found a number of sulphite mills in Wisconsin and Michigan were considering the use of this system.

Martin L. Griffin reminded those present that he had proposed the use of a screw press for the same purpose several years ago, the idea being suggested by the use of the Anderson Oil Expeller in the oil industry.

Use of Hot Water for Washing Pulp

R. Skagerberg, of Drying Systems, Inc., Chicago, asked for information regarding the use of warm water in washing pulp in the blow pits. His firm had developed a drying system by which heat could be recovered from the vapors given off by paper machine dryers to heat water for subsequent use in blow pits, so that if there was any advantage to be gained by using warm water in this way he would like to know something about it.

O. L. Berger said it was undoubtedly a good thing to use hot water in washing the stock in the blow pits. In sulphite mills where hot water from dryers was unavailable he sug-

Country Club, York, Pa., at Fall Meeting, September 15, 1926

gested utilizing heat that would otherwise be lost while blowing a digester. The steam which is let out into the atmosphere when blowing a digester might be condensed by direct contact with a spray of water and be used to wash the pulp.

Old Stuff, Says Crossley

W. E. Byron Baker said that the washing of pulp with warm water could be seen next day on the proposed visit to the mill of the York Haven Paper Company, while T. Linsey Crossley remarked that the discussion merely indicated how conservative was the industry, for eighteen years ago in a mill he was then connected with, hot water was used to wash the pulp with a consequent saving of 20 per cent of bleach.

In reply to a question by Mr. Griffin, Mr. MacNaughton mentioned that Oliver and Glamorgan filters were used for the washing of soda pulp at the mill of the Tonawanda Paper Company where the process of soda pulp manufacture was a continuous operation from start to finish. The cooked pulp was washed and led to bleachers and mixers and from there to the beaters and machines; the black liquor was recovered and burned to ash, the spent lime being at the same time recovered on a drum washer, passed into a lime reburner from which it was dropped with the black ash into a causticizer, so that the operation was really continuous.

Testing the Washing of Soda Pulp

H. R. Rafton spoke of soda recovery. He said that a well run rotary filter was an efficient means of recovering soda, but that a poorly operated one might be a source of appalling loss. The water used must be under rigid control as regards the amount of residual soda. The best method of testing pulp in order to determine whether it was well washed or not was to take a piece from the filter, dry it, incinerate it and then determine the amount of sodium carbonate in the ash.

W. E. Byron Baker spoke of the inconsistency of praising the diffuser system of washing and in the same breath lauding the advantages of continuous filtration washing. The experience of his company with rotary filters made him favor the diffuser system which, he said, was economical and satisfactory.

When to Wash

A. D. Wood asked how long it was safe to leave the pulp unwashed in the blow pit. His own experience taught him that water should not be added immediately after blowing. He also asked if the channels in the blow pit drain plate could be fixed so as to allow more time for washing. President Spence suggested that the subject be made a Service to Members interrogatory and sent out from the secretary's office for detailed answers.

The Rinman Process

Under the head of utilization of the products of distillation, Mr. MacNaughton said he had heard from Mr. Dahlin who was connected with Dr. Rinman and that the latter was expected to visit the United States next year; if he did come, he might be heard from at the annual meeting. Dr. Rinman is the inventor of a process for the dry distillation of black liquor, thereby recovering acetone, methanol and light oils.

Size of Chips and Yield of Pulp

R. H. Simmons, of the Oxford Paper Company, was invited to present the conclusions of a paper on soda pulp investigations which had been prepared by himself, D. E. Cable and R. H. McKee. He gave some figures bearing on the yield and quality of pulp as affected by length of chips. The woods used in the investigation were aspen, white birch, white maple and silver maple. Experimental cooks of these woods indicated slight if any differences in yield, bleach consumption or loss on bleaching, between chips of shortest length and those of greatest length within the limits of ½ to 1¼ inch. The authors conclude that—

1—With chips having lengths varying from 0.5 to 1.25 inch (with the grain) no appreciable differences in yield, bleach requirement or loss on bleaching can be detected for the species, Aspen, White Birch, White Maple and Silver Maple.

2—The above conclusions appear to hold regardless of whether the total duration of a cook is that commonly used in mill practice or only slightly longer than the minimum time possible for achieving a full pulping action on the chips.

3—The average yields of soda pulp under standard conditions for Aspen, White Birch and White Maple are 48.2, 46.4 and 45.0 per cent, respectively. Expressed as yields of air dry, bleached pulp per cord we get—from Aspen, 1176 pounds; White Birch, 1895 pounds, and White Maple, 2051 pounds. **These hardwood-pulp yields are thus between 55 and 75 per cent higher on a cord basis than the aspen yields.**

4—Silver Maple cooked 4½ hours appears to give practically the same yield as when cooked for six hours. Yields in either case are approximately the same on a percentage basis as yields of soda pulp from White Maple which has been cooked for 6½ or 7-hour intervals.

5—The bleach (with 35 per cent available chlorine) requirement and loss on bleaching for the pulps studied average as follows: Aspen, 8.3 per cent R; 1.5 per cent L; White Birch, 12.9 per cent R; 2.3 per cent L; White Maple, 13.5 per cent R; 2.6 per cent L; Silver Maple, 13.3 per cent R; 2.2 per cent L. (R, meaning bleach requirement and L, loss of weight on bleaching.)

Refrigeration in the Acid Plant

The advantages of refrigeration in a pulp and paper mill was the scheduled topic for discussion at the close of the morning sitting, but there was time left for John D. Rue to give the substance of a paper prepared by himself and Sydney D. Wells on "The Rod Mill in the Pulp and Paper Industry."

The question was raised as to whether it was of greater advantage to pass pre-cooled water down the acid tower while the acid was being made or to cool the finished bisulphite solution, and it was, of course, the consensus that by using ice-cold water in the towers it would not be possible to get as high a combined SO_2 as with warm water; the advantage of cooling the liquor after it was made was much greater.

J. A. Bowers, of the Hammermill Paper Company, was invited to give some particulars of the refrigerating system used in his mill. He said that at the start the Hammermill plant had a capacity of 175 tons a day, but it had since been doubled in capacity and now produced 350 tons daily. The ice plant was used five months out of the year to cool the acid as it left the tower.

Description of Rod Mill

In the outline of his paper on the use of the rod mill in the reduction of fiber wood chips, cereal straw and flax straw, John D. Rue described the mill as a hollow cylinder lined with steel plates, or a rubber lining interchangeable with steel plates, filled to half its capacity with steel rods a few inches shorter than the inside length of the mill and lying parallel to the axis of rotation. The rods are free to tumble, but retain the parallel position to each other as the mill is rotated, the upper rods cascading continuously down the surface of the rod bed.

The hollow cylinder is mounted on hollow trunnions. The chips are fed through one trunnion and the ground pulp flows through the opposite one. Sufficient water is fed with the chips to form a pulp suspension at the outlet of 4 to 8 per cent.

The rod mill has been used as an adjunct to a semichemical process of cooking in which neutrality of chemicals is aimed at. The idea being to avoid drastic hydrolytic action on the wood constituents, but strong enough to weaken the encrusting material. There is a pressure impregnation of the cooking liquor sufficient to assure uniform distribution of the chemicals throughout the wood previous to a mild cook with sodium sulphite, sodium bicarbonate being used with it in order to maintain neutrality of reaction with the organic acids formed in the cooking process. For every 100 pounds of wood 15 pounds of chemicals are used. The cooking liquor may be prepared by absorbing sulphur dioxide in a solution of soda ash. The carbon dioxide liberated is sufficient to convert the desired proportion of soda ash to bicarbonate.

The chips are charged into a globe rotary and steamed for half an hour at atmosphere pressure, after which the digester is filled with liquor which is forced into the chips under a pressure of 100 lb. per square inch. At the end of an impregnation period of one hour at a temperature of 120° to 125° C., the liquor not absorbed by the chips is returned to

the storage tank to be fortified for use in a subsequent cook.

After the return of the excess impregnating liquor, the digester contents are brought quickly to a temperature between 140° and 160° C. and held there for a period varying from one to six hours. The digester chips are dumped, and after being washed are ready to be fed to the rod mill.

York Haven Recovery Plant

The sitting was adjourned shortly after the noon hour when the members boarded special cars for York Haven where a complimentary luncheon was served in the auditorium of the York Haven library building, the visitors being officially welcomed to the town by Chief Burgess O. R. Emigh, a son of G. C. Emigh, superintendent of the York Haven Paper Company. Following the luncheon the visitors were taken to the recovery plant of this company, where the spent sulphite liquor from the pulp mill is neutralized and evaporated to make lignone, a substance which finds use as an adhesive for foundry cores and as a road binder, one concentrated form of the product even being sold as a patented cement for linoleum.

From the recovery plant the visitors were conducted through the pulp and paper mill, witnessing all stages of the manufacture of sulphite pulp and paper specialties, and studying the methods used for saving fiber in the white water from the paper machines. The visitors were then taken to the plant of the York Haven Water and Power Company, from which place a number of the members embarked on scows for a trip up the Susquehanna river as far as Stein's Landing whence they proceeded to Middletown for a visit to the Steam Generating Station of the Metropolitan Edison Company at Middletown, Pa., which is one of the largest and most efficient pulverized fuel installations in the East.

In the evening a banquet was held at the Hotel Yorktowne which proved a very enjoyable one. During its progress, Robert Lawrence, renowned song leader of Philadelphia, and an orchestra kept the party busy singing popular songs. The song leader had a worthy rival at one of the tables where "Al" Hooker and a group of enthusiastic technical men gave song selections of their own.

Speeches at the Banquet

James P. Whyte, professor of Oral English at Bucknell University, was the principal speaker of the evening and he proved to be a dynamic personality with a voice that penetrated to every part of the room. He urged the men and women present to "compete with their greatest possibilities." "React," said he, "to the limits of the possibilities of the business you are engaged in. If you are going to serve your community or your business, be a personality. Remember, it is service that makes a man complete." He criticized the tendency of legislators to make too many laws, saying the enactment of positive laws in too great number was a handicap to business. Because some morons were breaking laws today, a lot of new laws were being enacted to handicap other men.

How E. S. Hugentugler, Mayor of York, welcomed the visitors in a cordial speech. He reminded them that York was a city of great historical associations. It was selected to be the capital of the United States, and the Continental Congress met there after the capture of Washington by the British in 1777. In 1927 the sesquicentennial celebration of York as the capital of the United States would take place and Mayor Hugentugler hoped that many of those present would be able to come to York to take part in it.

"Senator" Edward Ford gave a rapid-fire talk that kept the audience in constant laughter. He informed those present that "he was no relation to a certain obscure manufacturer of one-year locusts and road larvae, such as King Richard III must have owned when he uttered his famous cry, 'My kingdom for a horse.'"

The toastmaster was Wright D. Pownall, president of the York Rotary Club, who saw to it that there was no let-up in the entertainment or supply of speakers and his introductions were extremely felicitous in every instance.

SECOND DAY'S SITTING

On Wednesday, the second day of the convention, the members were taken in busses and autos to the grounds of the York Country Club where the forenoon was occupied with discussions of waste in the industry and stream pollution, after M. C. Fleming, division engineer of the Hardinge Company, York, Pa., had described the Hardinge Sand Filter and Clarifier, a piece of machinery that was the subject of an article in THE PAPER INDUSTRY for March, 1926.

Hardinge Clarifier Described

The Hardinge clarifier consists of a round tank in which is a false or coarse gravel bottom. This false bottom supports a sand filter bed which is twelve inches to forty-eight inches deep.

A steel truss across the top supports the mechanism, which consists of a central shaft operated and suspended from the truss and having a spiral scraper attached to its lower end. The mechanism revolves very slowly, about one revolution in ten minutes, and in doing so, moves the deposited solids to a central well from which they are drawn or pumped off at intervals. The mechanism is also arranged so that at intervals, the spiral scraper is automatically lowered into the sand bed an infinitesimal distance so that a thin layer off the sand bed surface as well as the mud is taken to the center.

Penetration of fine particles into the sand filter was said not to occur. Static head, to increase the filtration rate, has been satisfactorily used but shallow tanks with centrifugal pump suction has proved equally satisfactory. The capacity obtained in filtering operations with these machines was said to vary with the material filtered.

Mr. Fleming said that one logical way to prevent stream pollution, or at least reduce it, was to convert the waste waters to such a condition that they would be satisfactory for reuse.

If only settleable solids were present, sedimentation methods offered a simple and satisfactory way. In many cases, however, the waste water contains considerable non-settling suspended matter or very slow settling suspended matter which it would be impractical to remove by sedimentation and, in such cases, an inexpensive filtration method probably offered the best solution. He said that a small Hardinge sand filter is now being installed at one paper plant to remove the non-settling solids from the waste water after it had passed through sedimentation equipment which effected a partial removal of the suspended matter.

Advocates Weighing of Furnish

As chairman of the Committee on Waste in the Industry, George D. Bearce was asked to lead the discussion. He said that the elimination of waste of fibers and other papermaking material was being more closely studied today than ever before. Most superintendents and technical men favored some special equipment in the same way as they favored their own radios and babies, deeming them the best of all. But for short-fibered stock the rotary type of filter was doubtless superior, whereas magazine stock was best recovered with sedimentation tanks. In the recovery of long-fibered stock screen save-alls were used to best advantage. In a news mill, the wood going into the mill should be weighed and compared with the weight of fiber used in the finished paper, and in the recovery process if a good accounting balance were to be obtained.

Richmond W. Smith discussed recovery statistics as obtained with the Bird save-all, and President Spence emphasized the importance of washing thoroughly so as to remove the last trace of bleach.

John Traquair said that an objection to the Hardinge clarifier was the necessity of using sand in its operation and he asked what could be done with a sludge mixed with sand. In his opinion the Dorr thickener was best, though the Hardinge clarifier should work well in straw paper mills. He was of opinion that State authorities would not object to a small proportion of clay in the effluent entering watercourses, seeing that clay is found in all streams.

President Spence said he had heard that the oxygen consumption of fibers in streams was detrimental to fish life. In reply to a query he gave the proportion of waste in treating old papers as 25 per cent.

Types of Mills Affected

Secretary MacNaughton said there were three types of mills that were confronted with the stream pollution problem.

Mills that use cellulose fiber in the form of rags can prevent waste of raw material and stream pollution, both of which go hand in hand. Mills that deink magazine stock were included and strawboard mills which were generally located on small streams, but a fourth type was the sulphite pulp mill which had no profitable use for waste liquor, though efforts were constantly being made to devise recovery processes. He pointed out that the annual production of sulphite fiber in the United States amounted to 2½ million tons, which meant that an equal amount of woody material was discharged into the streams and there was at the same time a loss of 300 lb. of sulphur and 300 lb. of lime for every ton of product. There was no form of waste more stream-polluting than the spent liquors of the sulphite pulp industry, being more offensive even than the waste of deinking plants, bleaching plants or strawboard mills. He called attention to the opinion and decision of the Railroad Commission of Wisconsin in the case of the Flambeau Paper Company, which was handed down February 20, 1926. In this opinion it was recommended "That the pulp and paper industry organize the various units of the industry for the purpose of inaugurating and maintaining a sustained, systematic, and scientific search for the solution of the problem of the disposal of the waste materials from the pulp and paper mills, in co-operation with such State and Federal agencies as may be available." Mr. MacNaughton said it was not unlikely that all sulphite mills in North America would be compelled to take steps to make some use of spent liquors instead of allowing them to pass out into the watercourses of the country. The final solution of the difficulty would be to separate the solids in the liquid for combustion as fuel, and at least two large mills in the United States were now working with evaporator firms on the problem. The evaporated and concentrated liquor had a fuel value of about 8,000 B. t. u. per pound, which, as pointed out later by W. E. B. Baker was scarcely suffcient to pay operating expenses.

Reflection of Improved Manners

Mr. MacNaughton commented in an interesting fashion on the lessons to be drawn from the general movement for stream purification. The fact that State authorities, backed by public opinion, had begun to serve notice on mills that they must take steps to prevent the defiling of lakes and streams by the discharge of objectionable waste liquors, reflected a higher standard of living. Fifty years ago it was considered good housekeeping to throw dirty wash-water out of the front door, and indeed from an upper story window, as some of the tales of old Edinburgh will reveal; with an improvement in manners the back door was used and then the sewers. The movement was merely a reflection of good housekeeping and the time would come when industrial wastes would no longer be discharged into the watercourses of the State.

T. Linsey Crossley asked if the toxic action of waste liquors on human beings had been studied; had there been any contamination of drinking water?

Joseph H. Slater said that little progress could be expected with methods of handling the effluents of mills until pulp and paper manufacturers could be assured of getting a reasonable return on their investment.

Mr. Rothchild Advocates More Research

H. A. Rothchild took exception to some of the expressions of opinion that had been made by certain speakers who had declared that the time is approaching when the sulphite mill would be no more. He said we should change our attitude and endeavor to educate the public concerning waste disposal problems. It was as much to the interest of fishing clubs and the public generally to assist in plans for preventing stream pollution as it was for manufacturers of pulp and paper. He advocated some special research on the subject rather than to attack it blindly. It was not true that mill wastes were responsible for the destruction of fish life, as low stream flow and altered climatic conditions were important factors, the denudation of watersheds, municipal sewage pollution being also responsible.

Allen Abrams suggested that it would be a good plan if we could hold out to the Isaak Walton League some immediate solution of the pollution problem such as might be provided by a method of impounding the spent sulphite liquor and aerating it before letting it enter the stream.

Use of Waste Liquor as Fuel

W. E. Byron Baker said it had been demonstrated at the York Haven Mill that sulphite liquor on being sprayed in air took up appreciable quantities of oxygen and the organic constituents bound by the oxygen were changed to less noxious substances. He said that recovery of the solids for use as fuel might be accomplished economically though at present the cost amounts to about $5 a ton. He understood that thermo-compressors had been used abroad and proved a failure. A process operated by Doctor Strehlenert in Sweden provided for the evaporation of the liquid till it assumed a solid form when it was compressed to make building blocks. As Mr. MacNaughton pointed out, building conditions were different in the United States from what they were in Sweden. He had talked with Doctor Strehlenert on a visit to Oslo last year.

Dr. Ralph H. McKee mentioned that he had been working on the utilization of sulphite waste liquor as a major problem since 1918. Discussing the use of thermo-compressors he considered them of special advantage with sulphite liquor, as superheating of the liquor prevented corrosion troubles, the gases being dry. In a talk with Umberto Pomilio on waste liquor recovery, the latter was confident that it could be carried out in two stages in a profitable way, with a production of thirty to forty gallons of alcohol per ton of pulp.

Operation of Dorr Save-All

It was suggested that Mr. Rothchild might be able to give some data concerning the operation of the Dorr save-all. He said that the Dorr system was applicable to mills where there were not many changes on the paper machine, but this applied to all settling or sedimentation systems. Sulphite or long-fibered stock did not work as well in a settling system; bubbles of air became attached to the fibers and caused trouble. The efficiency of such a system depended on its size, but every mill is a case to be considered by itself. The settlings characteristic of a stock on the same machine varies sometimes for no apparent reason. Replying to an inquiry concerning the type of coagulent used, Mr. Rothchild mentioned alum and this brought Doctor McKee to his feet with a suggestion that glue be used as an addition to alum, in the proportion of about 12 lb. of glue to half a million gallons of water. As regards air bubbles if the white water could be passed through a tank under a vacuum the air bubbles would be drawn off.

Cause of Air Bubbles

L. M. Booth said that air should be kept from getting into the stock if foaming troubles were to be avoided. He had seen recently the outlet of a save-all tank equipped with a spray to keep down froth, but if the other end of the system was examined it would be found that a centrifugal pump was operating with a leaking gland. Attend to the water seal and keep the air out at the source was his advice.

New Microscopic Technic

The forenoon sitting at the York Country Club was brought to a close with an illustrated paper by Loyd A. Jones, of the Eastman Kodak Company, on "Annular Oblique Illumination for the Microscopy of Surface Texture." The new method of illumination makes it possible to obtain stereoscopic effects whereby the felting of fibers could be observed. The rest of the afternoon was taken up with a luncheon on the lawn of the country club and visits to mills and industrial plants in the vicinity of York. In this way the Penn Fireboard Corporation, The Keystone Roofing Manufacturing Company and the Hardinge Company were visited by one group of members while another inspected the Schmidt & Ault Paper Company, the York Manufacturing Company, S. Morgan Smith Company, York Card & Paper Company and the York Printing Company.

Golf, tennis and baseball held the attention of some members, a distinguished ball game being played by W. Cronkhite's "Infants" against A. Bachman's "Midgets" which resulted in a tie, the score being 3-3.

A dinner and smoker at the club house in the evening closed the afternoon's festivities. Prizes were awarded to W. W. Cronkhite, John Cornell and J. A. Cameron for proficiency in

golf, tennis and baseball respectively. Al. H. Hooker, Jr., was billed to provide some sleight-of-hand entertainment, but he also acted as an efficient aide to Frank T. E. Sisson who functioned as song leader and general director of the orchestra in a most acceptable way.

THIRD DAY'S SITTING

Thursday's meeting took place in the ball room of the Hotel Yorktowne, the proceedings being started by President Spence at 9 A. M. There was a preliminary discussion of the control of acidity, as well as foaming troubles and sizing difficulties, which was opened by Allen Abrams. Mr. Spence said that the alkalinity of stock was controlled in his mill by taking the pH value and keeping it at a definite figure of five. Foam was controlled by adding alum. Dr. R. H. McKee said there were three methods of determining pH values, meaning the acid or alkaline reaction of a stock. He spoke of the electrometric method, the quinhydrone method and the La Motte colorometric method. He also mentioned what he said was a simpler method using two wedges of stained glass, one colored for alkali, and the other for acids. This double-wedge comparator scheme was possibly the speediest. Mr. Griffin called attention to the fact that titration methods and hydrogen ion control were not comparable, the one being a measure of quality and the other of intensity.

Deinking and Washing Waste Paper Stock

J. J. O'Connor, of the Mead Pulp and Paper Company, opened a discussion on deinking and washing waste paper stock by reading a paper describing the processes used and suitab sorts of paper to be deinked. Printed coated paper was easiest handled, though objection was made to the amount of mineral matter contained as compared with uncoated paper. Super-calendered book papers defibered easily, but lithographic poster papers and hard-sized papers were difficult to deink. Of course, all groundwood sheets were unusuable if a good quality of finished stock was desired. The most important step in the operation of deinking waste paper stock was the saponification of the ink. Sodium hydroxide and sodium carbonate are the cheap alkalis used in deinking but the amount used must be carefully regulated.

Mr. O'Connor described the procedure used at Chillicothe where 90 lb. of sodium hydroxide is dissolved in 3,500 gallons of clarified water to treat 2,300 lb. of sorted papers. Steam is turned on and the mixture agitated from thirty to a hundred minutes at a temperature of 200° F. The stock is screened after dilution with water to a consistency of 0.7 per cent. An Oliver Filter is used as a save-all. The text of Mr. O'Connor's paper will be found on another page of this issue of THE PAPER INDUSTRY.

Discussion on Deinking

The paper was discussed by John Traquair and H. A. Rothchild. One thing to avoid was an excess of sodium hydroxide, and a little bleach must be used to get rid of aniline dyes which are a constituent of some inks. An Oliver filter is made to serve as a washer as well as a save-all. Mr. Rothchild said he had found the use of the drained-off liquor from the old paper stock to be of value, as deinking took place in two stages, saponification and washing out of the soapy emulsion. The sodium salt of linseed oil formed in the first saponification process was useful in saponifying a second charge. Mr. Traquair was of opinion that the tanks necessary in the operation might be prohibitive on account of the cost.

George K. Spence said he constantly re-used the liquor and for washing the stock the white water from the soda mill save-all was serviceable. He gave some particulars of the method of soaking the stock and seasoning it for twenty-four hours in large rectangular tanks from which it went to diffusers or beaters, with a final washing in a Lancaster machine. After the bleach is added, it is allowed to drain before it gets a slight washing. Acid was used to neutralize the bleach.

Mr. MacNaughton was of opinion that the real solution of the deinking problem lay in the production of a printer's ink that could be more easily washed out or which would be fugitive to light.

John J. Slater mentioned that attempts had been made at one time to remanufacture old newspaper into new paper but the operation was too costly on account of fiber loss. He agreed that the solution of the problem was to be found in the invention of a fugitive ink.

Visit to Spring Grove

The afternoon was spent in a visit to the pulp and paper plant of P. H. Glatfelter Company. The members were invited to the estate of the Glatfelter family where luncheon was enjoyed on the lawn. After viewing the attractions of the place many of the members were taken on a special trip to the Battlefield of Gettysburg and others left for their respective homes, as this brought the enjoyable fall meeting of T. A. P. P. I. to a close.

T. A. P. P. I. ATTENDANCE

The following is a transcript of the registrations for the York meeting of the Technical Association of the Pulp and Paper Industry, September 14 to 16, 1926:

Armand J. Abrams, Bogalusa Paper Company, Bogalusa, La.; Allen Abrams, Marathon Paper Mills Company, Rothschild, Wis.; F. B. Allen, Allen Sherman Hoff Company, Philadelphia; W. H. Artz, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.; A. L. Allen, General Electric Company, Pittsfield, Mass.

Albert Bachmann, American Writing Paper Company, Holyoke, Mass.; Mr. Baker, P. H. Glatfelter Company, Spring Grove, Pa.; W. E. Byron Baker, Continental Paper and Bag Mills Corporation, New York, N. Y.; R. R. Baker, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.; H. F. Banan, Westinghouse Electric and Manufacturing Company, Boston, Mass.; George D. Bearce, News Print Service Bureau, New York, N. Y.; Harry Bennett, Valley Iron Works Company, New York, N. Y.; O. L. Berger, G. D. Jenssen Company, New York, N. Y.; M. R. Bhagwat, Columbia University, New York, N. Y.; P. S. Bolton, Muirhead & Mansfield, New York, N. Y.; L. M. Booth, Booth Chemical Company, Elizabeth, N. J.; Ralph S. Bosworth, Crocker-McElwain Company, Holyoke, Mass.; J. A. Bowers, Hammermill Paper Company, Erie, Pa.; Forrest W. Brainerd, Dill & Collins Company, Philadelphia, Pa.; Levi A. Bupp, Pennsylvania Fibreboard Corporation, York, Pa.; Harry C. Busser, York Haven Paper Company, York Haven, Pa.

Olin W. Callighan, Allied Paper Mills, Kalamazoo, Mich.; E. P. Cameron, Forest Products Laboratories of Canada, Montreal, Que.; James A. Cameron, Cameron Machine Company, Brooklyn, N. Y.; C. E. Carpenter, Arthur D. Little, Inc., Cambridge, Mass.; E. V. Carey, Westinghouse Electric and Manufacturing Company, Watertown, N. Y.; Roy C. Charron, United States Envelope Company, Worcester, Mass.; John Cornell, Paper Mill, New York, N. Y.; D. E. Cousins, Tonawanda Paper Company, Inc., North Tonawanda, N. Y.; W. W. Cronkhite, General Electric Company, Schenectady, N. Y.; T. Linsey Crossley, Industrial Laboratories, Ltd., Toronto, Ont.; Noel Cunningham, Hardinge Company, York, Pa.; C. E. Curran, Forest Products Laboratory, Madison, Wis.

Guy H. Davies, Mount Holly Paper Company, Mount Holly Springs, Pa.; Philip DeWolf, Joubert & Goslin Machine and Foundry Company, New York, N. Y.; J. C. Dieffenderfer, Paper Makers' Chemical Company, Easton, Pa.; Jacob Edge, Downingtown Manufacturing Company, Downingtown, Pa.; J. C. Eisenhart, York Card and Paper Company, York, Pa.; Charles L. Ellis, Downingtown Manufacturing Company, Downingtown, Pa.; C. M. Eshelman, Cameron Machine Company, Brooklyn, N. Y.; R. C. Evans, York Card and Paper Company, York, Pa.

R. C. Farnsworth, Farnsworth Company, Harrisburg, Pa.; R. C. Ferguson, Hardinge Company, York, Pa.; F. E. Finch, Hardinge Company, York, Pa.; M. C. Fleming, Hardinge Company, York, Pa.; S. W. Fletcher, J. O. Ross Engineering Corporation, New York, N. Y.; William B. Ford, American Glue Company, Boston, Mass.; Geo. A. Forman, Schmidt & Ault Paper Company, York, Pa.; James Foxgrover, Western Paper Makers' Chemical Company, Kalamazoo, Mich.; H. W. French, Hammermill Paper Company, Erie, Pa.

G. P. Genberg, Frazer Companies, Ltd., Edmundston, N. B.;

W. B. Gery, The Dorr Company, New York, N. Y.; P. H. Glatfelter, P. H. Glatfelter Company, Spring Grove, Pa.; P. J. Gilbert, Gilbert Wall Paper Company, York, Pa.; V. H. Gottschalk, U. S. Bureau of Efficiency, Washington, D. C.; U. S. Grant, Westinghouse Electric and Manufacturing Company, Philadelphia; C. S. Gravatt, Western Union Telegraph Company, New York, N. Y.; Martin L. Griffin, Taunton, Mass.

G. A. Hall, Albemarle Paper Manufacturing Company, Richmond, Va.; George K. Hammill, Glue Research Corporation, Bureau of Standards, Washington, D. C.; C. S. Hamm, Mead Fibre Company, Kingsport, Tenn.; J. R. Hartman, Union Gas and Electric Company, Cincinnati, Ohio; J. D. Haskell, Dilts Machine Works, Inc., Fulton, N. Y.; Mr. Hawkins, P. H. Glatfelter Company, Spring Grove, Pa.; R. J. Hilliker, York Manufacturing Company, York, Pa.; E. S. Hinman, P. H. Glatfelter Company, Spring Grove, Pa.; Albert H. Hooker, Jr., Hooker Electro-chemical Company, New York, N. Y.

S. W. Jacobs, Electro Bleaching Gas Company, New York, N. Y.; G. W. Jessop, S. Morgan Smith Company, York, Pa.; C. A. Jobson, N. Y. and Penn. Co. and Castanea Paper Company, Lock Haven, Pa.; C. N. Johnson, Westinghouse Electric and Manufacturing Company, Philadelphia; Douglass R. Judd, Hardinge Company, York, Pa.

Thomas J. Keenan, THE PAPER INDUSTRY, New York, N. Y.; Horace Keesey, Jr., Schmidt & Ault Company, York, Pa.; M. J. Kelly, P. H. Glatfelter Company, Spring Grove, Pa.; A. J. Kennedy, The Sandy Hill Iron and Brass Works, Hudson Falls, N. Y.; C. H. Kephart, York Haven Paper Company, York Haven, Pa.; David J. Kerr, The Champion Fibre Company, Canton, N. C.; Helen U. Kiely, American Writing Paper Company; D. B. Kimball, Bird & Son, Inc., East Walpole, Mass.; J. H. Kline, York Haven Paper Company, York Haven, Pa.; Paul Koenig, Continental Paper and Bag Mills Corporation, New York, N. Y.; M. A. Krimmel, Hammermill Paper Company, Erie, Pa.; D. B. Kuhe, Continental Paper & Bag Mills Corporation, Rumford, Me.

R. W. Leeper, Canadian General Electric Company, Toronto, Canada; John S. Little, Western Electric Company, Chicago, Ill.; E. R. Low, Beaver Products Company, Inc., Buffalo, N. Y.; A. H. Lowry, United States Rubber Company, New York, N. Y.; A. H. Lundberg, G. D. Jenssen Company, New York, N. Y.

Mr. Mahaley, P. H. Glatfelter Company, Spring Grove, Pa.; W. G. MacNaughton, secretary, T. A. P. P. I., New York, N. Y.; J. W. Magee, Westinghouse Electric and Manufacturing Company, Philadelphia, Pa.; Wm. S. McClellan, P. H. Glatfelter Company, Spring Grove, Pa.; D. J. McCormack, S. Morgan Smith Company, York, Pa.; C. H. McDuffee, Claremont Paper Company, Claremont, N. H.; Louise E. McGrath, Booth Chemical Company, Elizabeth, N. J.; Robert McJohnstone, Cameron Machine Company, Brooklyn, N. Y.; Ralph H. McKee, Columbia University, New York, N. Y.; G. F. Metz, Hardinge Company, Inc., York, Pa.; Mr. Miller, P. H. Glatfelter Co., Spring Grove, Pa.; Guyon Miller, Downingtown Manufacturing Company, East Downingtown, Pa.; James D. Miller, York Haven Paper Company, York Haven, Pa.; B. H. Morrison, Hamlin & Morrison, Philadelphia; F. J. Morrison, Hummel-Ross Fibre Corporation, Hopewell, Va.; Harry J. Myers, York Haven Paper Company, York Haven, Pa.

Fred Naegeli, R. T. Vanderbilt Company, New York, N. Y.; John P. Nagle, York Haven Paper Company, York Haven, Pa.; J. H. Noble, Oliver Continuous Filter Company, New York, N. Y.

J. J. O'Connor, Mead Pulp and Paper Company, Chillicothe, Ohio.

L. J. Parant, St. Croix Paper Company, Woodland, Me.; Harold L. Peckham, Hammermill Paper Company, Erie, Pa.; W. A. Pitts, York Haven Paper Company, York Haven, Pa.; A. G. Pounsford, Provincial Paper Mills, Ltd., Port Arthur, Ont.; Max Poyck, The Heller & Merz Company, New York, N. Y.; F. W. Preston, Keystone Roofing Company, York, Pa.

Harry D. Quickel, Schmidt & Ault Paper Company, York, Pa.

Harold R. Rafton, Raffold Company of America, Lawrence, Mass.; G. F. Reale, Hooker Electrochemical Company, New York, N. Y.; Charles H. Reese, Hammermill Paper Company, Erie, Pa.; Carl F. Richter, Vera Chemical Corporation, Stoneham, Mass.; H. W. Rogers, General Electric Company, Schenectady, N. Y.; Henry A. Rothchild, Kimberly-Clark Company, Neenah, Wis.; James J. Rudisill, Jr., York Printing Company, York, Pa.; John D. Rue, U. S. Forest Products Laboratory, Madison, Wis.

Thomas H. Savery, Jr., Nash Engineering Company, Chicago, Ill.; William H. Savery, Harpers Ferry Paper Company, Harpers Ferry, W. Va.; H. D. Schmidt, Schmidt & Ault Paper Company, York, Pa.; B. W. Scribner, Bureau of Standards, Washington, D. C.; R. T. Scully, General Electric Company, New York, N. Y.; Harry R. Serf, Schmidt & Ault Paper Company, York, Pa.; Merle B. Shaw, Bureau of Standards, Washington, D. C.; S. H. Shipley, York Manufacturing Company, York, Pa.; Charles A. Schubert, Dill & Collins Company, Philadelphia, Pa.; Charles A. Schubert, Dill & Collins Company, Philadelphia, Pa.; R. H. Simmons, Oxford Paper Company, Brooklyn, N. Y.; F. T. E. Sisson, Racquette River Paper Company, Potsdam, N. Y.; R. Skagerberg, Drying Systems, Inc., Chicago, Ill.; Jos. H. Slater, Escanaba Paper Company, Escanaba, Mich.; Beauchamp Smith, S. Morgan Smith Company, York, Pa.; E. H. Smith, Paper Makers' Chemical Company, Easton, Pa.; Richmond W. Smith, Bird Machine Company, South Walpole, Mass.; J. J. Solberg, Beaver Wood Fibre Company, Ltd., Thorold, Ont.; Surgeon Spangler, Schmidt & Ault Paper Company, York, Pa.; G. K. Spence, New York & Penn. Company and Castanea Paper Company, Johnsonburg, Pa.; S. W. Stauffer, J. E. Baker Company, York, Pa.; R. R. Stoltz, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.; D. Manson Sutherland, Jr., Trenton, N. J.; William Sutherland, Pennsylvania Fibreboard Corporation, York, Pa.; P. D. Switzer, Bird Machine Company, South Walpole, Mass.

C. R. Tait, Hammermill Paper Company, Erie, Pa.; J. K. Towers, Hardinge Company, Inc., York, Pa.; John Traquair, Mead Pulp and Paper Company, Chillicothe, Ohio; E. F. Troop, P. H. Glatfelter Company, Spring Grove, Pa.;

George W. Van Steenbergh, Lockwood Trade Journal Company, New York, N. Y.

William J. Weed, Electro Bleaching Gas Company, New York, N. Y.; S. C. Wentz, P. H. Glatfelter Company, Spring Grove, Pa.; Byron Weston, Mount Holly Paper Company, Mount Holly Springs, Pa.; Harry E. Weston, Thomas H. Savery, Jr., Chicago, Ill.; M. A. Wilhelm, Schmidt & Ault Paper Company, York, Pa.; J. R. Wilken, B. F. Goodrich Rubber Company, Akron, Ohio; F. E. Winslow, General Electric Company, Schenectady, N. Y.; A. D. Wood, Champion Fibre Company, Canton, N. C.; J. B. Woodruff, Holyoke, Mass.

T. L. Crossley Gets Lecturing Appointment

The University of Toronto has appointed Mr. T. Linsey Crossley, special lecturer in pulp and paper in the department of chemical engineering of the faculty of applied science. Mr. Crossley is well known in the industry as a technical man with wide exerience. He is president of the Industrial Laboratories, Limited, of Toronto and Montreal.

His interest in educational matters in the industry has made him a familiar figure at meetings of the Technical and Superintendents' Association.

Forest Protection Conference Announced

The tentative program for a conference on Forest Protection has been announced by the New York State College of Forestry, Syracuse University, for November 10-12, inclusive.

The conference will be of special interest because of the increase in the number of forest fires, the growing destructive attacks by insects, new tree diseases, as well as the rapid development in the public use of the forest. The purpose of the conference will be to devise means of putting into practice better methods of protection against all kinds of forest depletion. Scientists and experts from all parts of the country are expected to attend and contribute a number of interesting and instructive papers.

The Appleton Safety Conference

Many People Attend Second Annual Fox River Safety Conference and Receive Great Benefit from Discussions and Inspiring Talks

WHEN industrial forces in the State of Wisconsin get together for the purpose of doing something big to meet a mutual need, expectations of desired results are generally realized.

Following the first annual regional safety conference which went over with howling success in Green Bay last year, the Appleton Chamber of Commerce offered the hospitality of its city for the next meeting and upon acceptance immediately set about to prepare a big program for a record attendance.

This second annual Fox River Valley Safety Conference was held in the Lawrence Memorial Chapel in Appleton on Wednesday, September 29th, sponsored by the following associations:

American Pulp & Paper Mill Superintendents' Association.
ASSE-Engineering Section, National Safety Council.
Paper & Pulp Section, National Safety Council.
Public Utilities Section, National Safety Council.
Woodworking Section, National Safety Council.
"On Wisconsin" Association, National Safety Council.
Wisconsin Chiefs of Police Association.
Industrial Commission of Wisconsin.
Compensation Insurance of Companies of Wisconsin.
Appleton Chamber of Commerce.

The Employers of Appleton, Neenah, Menasha, Oshkosh, Fond du Lac, Green Bay, Kaukauna, Marinette, Manitowoc, Two Rivers, Sheboygan and other cities.

Registration took place at the general headquarters in the Conway Hotel and at the Lawrence Chapel and the number reached the magnanimous figure of 647.

In conjunction with the Safety Conference was an open forum meeting of the Appleton Chamber of Commerce which was held in the evening at the First Methodist Church. Between 25 and 300 school teachers from all cities in the Fox River Valley attended, which brought the grand total to nearly 1,000 people.

The program was divided into three general sessions—morning, afternoon, and evening—with the addition of other speakers at the noon luncheon and the six o'clock dinner. Preceding the evening session which took place in the Lawrence Chapel at seven-thirty o'clock, was a highly enjoyable vaudeville entertainment under the direction of Mr. and Mrs. J. F. Bannister, of Appleton, and community singing led by Al Kroes, of the Employers Mutual Liability Insurance Company of Wisconsin.

MORNING SESSION

The morning session began at 9:30 o'clock, R. G. Knutsen, Commissioner, Industrial Commission of Wisconsin, presiding. Mayor A. C. Rule of Appleton welcomed the visitors in a hearty way "because of the fine purpose of the safety meeting which has human welfare in view."

Discussion On Ways to Seek Safety

The subject introduced for the opening discussion on the program was whether the foreman or the management is responsible for the safety program of a manufacturing plant, and it was led by two prominent safety engineers of more than fifteen years' experience. Mr. August Kaems, safety engineer, Simmons Bed Company, Kenosha, Wisconsin, and Mr. S. H. Slaymaker, safety engineer, Beloit plant of the Fairbanks Morse Company, in which is manufactured marine and stationary engines and farm equipment.

Mr. Kaems introduced the discussion by speaking on the topic, "How I Would Seek Safety in a Manufacturing Plant." He said that safety must first be sold to the plant manager, then safety reports as well as production reports are brought to his desk. A high standard of morale and safety interest exists throughout a plant when the chief executive is concerned with accidents being kept down. "Each mill, no matter how small," said Mr. Kaems, "should have a safety engineer. If the mill is too small to be able to pay for one alone, it should combine with some others and hire such a man jointly. The safety of the workmen should be regarded just as highly as the production report." Mr. Kaems believes that the foremen have as much work as they can handle without trying to make them take care of the safety program. He cited figures of accidents at the Simmons plant for the past two years showing how the number of accidents was reduced through co-operation and showing the very small number that could have been avoided by the foreman.

Mr. Slaymaker took an opposite view on the safety problem in a big plant and stated that his method of obtaining results is to educate the foremen. He told of the plan in the plant where he is employed and of the results obtained through educating the foremen in safety, first aid, the use of bulletins and by competition between departments.

"The foreman is the keynote to safety and it is only through him that you can successfully enforce safety rules because he is the direct connection between the management and the employees," Mr. Slaymaker said. "Safety must be drilled into the foreman who will in turn become enthusiastic and influence the men in charge."

A general discussion followed the addresses. It was finally decided that there must be co-operation between the management and the foremen and every man in the mill. The management must be sold on the idea of safety and must give the idea to the foremen who finally are the real factors in enforcing a safety program.

Eye Accidents and Their Prevention

The subject of "Eye Accidents and Their Prevention" was then presented by Dr. Sidney Walker, of Chicago, consultant of the Industrial Commission of Illinois. He stated that about 3,500 new eye accidents are brought to his attention each year; that of the enormous number of accidents in Chicago, from one-half to one per cent are eye accidents. Those whose eyes are good stand better chances of recovery; poor general health is a preventative in this respect.

Eye examinations should be compulsory in every plant, he said, for frequently it is found that a workman is unconsciously the possessor of poor sight which compels that his position be changed before a serious accident occurs.

The shop oculist came under the doctor's condemnation as the worst menace to eyes. He explained that the man considered handy with a knife or a file in removing articles from the eye would in nine or ten cases be successful, but the last time his finger would slip or the patient would move and irreparable damage would be done. He cautioned the guarding against this menace.

Various types of goggles and helmets, the product of the American Optical Company, Southbridge, Mass., were demonstrated to show their use when employees are exposed to flying chips, acid or other eye hazards.

Luncheons

Adjournment was ordered for noon luncheons. In the counting of noses, it was found that about two hundred and fifty of those present were representing the pulp and paper industry—a splendid demonstration of the part this industry takes in the study of accident prevention. The dining room of the Conway Hotel was given over to the accommodation of this one group.

The Woodworking and Metals representative were sent to the Northern Hotel, while the Public Utilities and unclassified representatives lunched at the Appleton.

Enthusiasm prevailed at the luncheon of the Paper and Pulp Section. The mills of the Fox River Valley were among the most active participants in the contest conducted by The Paper Industry under the auspices of the National Safety Council covering the first six months of 1926, for which a

silver loving cup is to be awarded to the successful mill whose name will be announced at the Safety Congress in Detroit on the 27th of this month. Community singing lead by Al. Kroes furnished the outlet for this pent up enthusiasm, and the program was supplemented by an entertaining and refined vocal duet. A formal subject was presented at the luncheon covering Experienced Rating. This was presented by Mr. Haydon, manager of the Wisconsin Comparative Ratios Bureau.

AFTERNOON SESSION

The afternoon session convened promptly at 2 o'clock, in the Lawrence Chapel, under the leadership of J. Leslie Sensenbrenner, chairman of the Industrial Committee, Appleton Chamber of Commerce.

Talk On Guards

"Guards: Their Efficiency and Their Limitations," was the first subject on the program by Mr. Fred M. Wilcox, chairman of the Industrial Commission of Wisconsin.

"Foremen are the crux of the safety movement," Mr. Wilcox said. "Workmen must be made to understand that safe conduct is the course in the factory. The man who will not understand and will not follow such a course should go, and it is the foremen who can see these men."

The automatic guard rather than the adjustable one was recommended by the speaker, as the risk of accident was many times greater with a guard that could be tampered with by the employee. "The guard should be of substantial nature and should seem a part of the machine, not a mere makeshift proposition that will not impress the men with its necessity," he said.

"The guarded machine is more economical than the unguarded," Mr. Wilcox said, "for the employer, because of the cost of compensating the injured worker and of paying another worker to take his place, and for the public, because of the unwarranted expense of supporting or helping to support the man and his family who are dependent on society because of an industrial accident."

Safety On Public Highways

The subject of "Safety On Public Highways," attracted the undivided attention of all to Colonel Henry C. Baker, chief of Police, Racine, Wis., who believes that a great many accidents on public highways could be eliminated if the incompetent drivers were removed. Colonel Baker especially commended the recent movement to deprive intoxicated drivers of the privilege of operating an automobile and imprisoning them.

"Traffic regulations should be made more simple and more easily understandable," the speaker said. "By this means there will be greater respect for the law because its reason will be more clear and it will be easier to enforce the law."

Colonel Baker gave a detailed report of a conference at Washington, D. C., of men from all the states in the Union who were interested in safety on the highways. The recommendations of the conference included the elimination of drivers who cut in ahead in a long line of traffic, endangering the cars coming in the opposite direction and also the increase of the permissible speed on highways. He said that a maximum speed of forty miles an hour and a minimum of twenty-five miles an hour would cause fewer accidents than are now occurring, because there would be less cutting in.

Colonel Baker explained a method which is being practiced in Racine, employing high grade pupils in the capacity of Junior Police. Since this bureau was started, about a year ago, which includes the service of about one hundred school children, there have been no accidents to school children. The Junior Police have stars and stop signs which they use in the zones surrounding school houses and their compensation for faithful work is in the form of verbal expression of praise given to them by the police department and a treat to one of the local theaters.

Colonel Baker recommended that state traffic laws should be made by safety directors who understand traffic and not by men who previously started in the horse and buggy era. A resolution was unanimously adopted by those attending the meeting recommending that no automobile operator be allowed to drive without a license signifying his competency to drive.

"Near" Accidents

The subject of the "Foreman's Responsibility for Safety and His Relation to 'Near' Accidents" was covered by Mr. Frank R. Kreutzer of the Paine Lumber Co., Oshkosh, Wis. Mr. Kreutzer cited several instances in his experience of "near" accidents which might easily have been of a serious nature, and stressed that if lessons would be learned from these only "near" accidents, that many of the real dangers could be eliminated. If all of the workers could retain as vivid an impression of the serious possibilities of these "near" accidents as the man who experiences them, there would be fewer lost time accident cases.

Round Table Discussion

A general round table discussion then took place, on questions pertaining to safety, which were presented on cards distributed for that purpose.

The question of greatest importance to paper manufacturers was "What Would a Physical Examination Cost for Men Entering Employment?"

Mr. Hoyman, safety director of the Kimberly-Clark Co., stated that his investigation of such a cost determined that a careful examination including a blood test could be secured for $2.00 a person. Others in the meeting endorsed Mr. Hoyman's remarks and stated that money thus spent was well spent.

PAPER SECTION DINNER

Adjournment for dinner was ordered and the same arrangements were carried out as provided for the noon luncheon. The Paper and Pulp Section dinner was manifestly full of pep. The Kimberly mill of Kimberly-Clark Co., was represented by a large group—all wearing red crowns on which the name of Kimberly was printed. The spirit of Kimberly fellowship was exhibited in the performance of one of their employees dressed as a black-face comedian who sang songs to the accompaniment of his banjo. Serious appreciation was then had of an intellectual address on the subject of "Safety Consciousness," delivered by Mr. D. D. Fennell, industrial engineer of the firm of D. D. Fennell & R. I. Bradley, Associates, Chicago.

Safety Consciousress

Mr. Fennell's address was an inspiration and an outstanding feature of the program. In his plea for safety consciousness, he pointed out the necessity for the teaching of certain fundamental truths as a basis for real safety education.

The adventurous spirit of our people suggests the first problem in the safety educational work, he said. The second is wastefulness. Wherever you find an abnormal casualty record in a plant which has no extraordinary hazards, usually you will find careless, wasteful management and general disregard for discipline and order among the operatives. From industry must come the impetus of this safety educational movement. "Safety is a habit," he said. "It cannot be worn react from the excitement of danger as electricity flows at the touch of a button. We cannot act safety unless we think safety. And there is the crux of the whole matter. Many people are unable to learn to speak a foreign language because they seemingly cannot learn to think in that language.

"We cannot train our men to do the obvious thing when danger is potential or actual unless we can teach them to think safety. The teaching of safety should not be difficult because it ties itself up so intimately and logically with plain instinctive human thinking."

The three basic human instincts were shown to be (1) self preservation or the struggle to live, to which might be added the will to accumulate—the will to live and to have; (2) reproduction—the will to reproduce our kind; (3) the social or herd instinct—the spirit of co-operation which enables us to live with our fellows in a great social structure.

"Thinking in terms of safety," said Mr. Fennell, "should eventually develop a safety complex. There is little individualism in ideas. When an idea enters the mind, it immediately seeks attractive associations. It joins a group which is of its kind. When a group of ideas band themselves together, they form what is known as a complex.

"Complexes are like railway systems. Every idea entering the human consciousness becomes first a link in a chain

and is apt itself to become the center of a diverging system. The systems root themselves in the three basic or primal instincts."

We all have complexes, it was shown. To the paper manufacturer, for example, the whole world revolves around his industry. When he goes into a great forest, he may admire the beauty and splendor of the massive trees and be charmed with their setting, but he cannot resist the thoughts that come from his subconscious mind which considers them in terms of pulp made up into paper. He has the paper complex. And the root of this complex goes down to the instinct of self preservation. This paper manufacturer may be young and unmarried. As his business prospers, the instinct of reproduction presses for recognition and soon a new series of groups or complexes are tied up with the principal one. The coming of children brings into play the social or herd instinct and a new complex.

"What we must build up in the minds of the people," Mr. Fennell said, "is a Safety Complex. It comprehends attachment to every primal and sub-instinct of human life. (1) The will to live—it is effective only through preservation and conservation made possible by Safety; (2) Reproduction—the sacredness and blessing of dependent lives brought into being by ourselves may be sure to enjoy when provisions are made for their safety; (3) The social instinct—only as we labor co-operatively, intelligently and wholeheartedly for this great cause can we hope to ingraft in the minds of our people regard for human life and property.

"The development of a safety complex will insure: (1) greater regard for human life; (2) thrift; (3) better workmanship; (4) recognition of and regard for property and property rights; (5) enlightened social consciousness."

EVENING PROGRAM

This concluded the dinner and the entire conference was again assembled in Lawrence Chapel to be entertained by a vaudeville and community singing followed by a wonderfully interesting talk by Judge Alva R. Corlett, of Cleveland, Ohio, on the subject of "Securing Traffic Safety."

Senator Ferris of Michigan Introduced

Before introducing the speaker of the evening, Senator Woodbridge N. Ferris of Michigan was presented and received a hearty ovation. He had been addressing the meeting of the Appleton Chamber of Commerce, held in conjunction with the Safety Conference and simply came into the Safety meeting to express appreciation of his visit to that city. In the previous meeting, Senator Ferris made a plea for the restoration of the fundamentals of the pioneer home—obedience, work, honesty, self denial, self sacrifice and thrift. "These fundamentals were drilled into the youth of the pioneer home," he said. "Today, the average youth of the modern home has little conception of this meaning. Without obedience in the home, youth will never learn it in school," he said. "Laxness in enforcing obedience is in reality cruelty to youth and usually results in the youth ruining himself and breaking the hearts of his parents."

Judge Corlett On Traffic Safety

Hugh G. Corbett, secretary of the Appleton Chamber of Commerce, gave a short humorous talk on "Traffic and Safety, or What's Left of the Vanishing Race-the-Pedestrian," and this was followed by the address of Judge Corlett.

The speaker condemned in vehement terms the automobile speeder. Out of all thousands of cases brought before him, he stated, there was not a single instance when the speeder could justify his action.

"Men who have achieved success, and whose time is worth probably $100 a day, almost invariably realize the value of life and property. It is usually the $25 or $30-a-week man who is guilty of speeding and reckless driving," Judge Corlett declared.

Sentences consisting merely of fines do not deter the average law-abiding motorist, according to the speaker. He pays the required amount and continues to speed or to encourage others by the light sentence. When jail terms were imposed in Cleveland, after it had been customary to impose only fines, the number of law violations immediately decreased.

"You can't wipe out all crime, as the reformer would have us believe, for human nature has not changed much through the last few thousand years, but it is your duty to exert your influence to prevent the world from getting worse," Judge Corlett maintained.

While the percentage of accidents has decreased in the industrial world, that of traffic accidents has greatly increased. In business there are no pernicious "fixers," he said.

Scoring the selfishness and laziness of many business men who park their automobiles on the street and yet complain of insufficient parking space, Judge Corlett declared that the "Minute streets are no longer used for storage purposes, one thousand lives will be saved." Any man who drives a car, he stated, should not be too lazy to walk a block after parking his machine, or too stingy to pay a parking fee.

1927 Conference At Sheboygan

Sheboygan was chosen as the meeting place of the third annual Fox River Safety conference in 1927. The decision was made following the receipt of invitations from both Fond du Lac and Sheboygan.

Import Committee's Check on Foreign Paper

Recent decisions of the United States Customs Court in holding various importations of paper to have been undervalued have been followed by petitions of the importers for remission of the additional duties imposed when undervaluation is found. In these cases the importers asked for remission of the additional duties on the ground that there had been no intent to defraud the government. In some instances where the importers proved that the under-valuation had been without fradulent intent the additional duties were remitted. In the following cases, however, such remission was denied:

Rotogravure paper imported at Boston.

German sulphite wrapping paper imported at New York. The court said there was no explanation of the facts that paper with a home market value of $6.05 per hundred kilos was entered for duty purposes at $4.25.

Indications continue that importers are realizing more and more that the Import Committee of the American Paper Industry does not initiate a case involving improper imports of foreign paper unless the Committee has reason to believe that its position can be sustained before the Customs Court. This is shown by the fact that in many recent instances importers have abandoned their appeals to the Customs Court to reverse decisions of appraisers and have allowed decision to be rendered against them by default. Some such recent cases include the following:

Book paper imported at Philadelphia claimed by the importer to be duty free as standard newsprint, but held by the appraiser to be dutiable as printing paper.

Paper imported at New York as standard newsprint duty free, held by appraiser to be dutiable as printing paper.

Cover paper claimed by importers at New York, Philadelphia, and elsewhere, to be dutiable as printing paper, but held by appraisers to be subject to a higher duty as paper not specially provided for.

Glassine paper with metal coating claimed to be dutiable at 3 cents per pound and 15 per cent, held by appraiser to be dutiable because of this metal coating at 5 cents per pound and 17 per cent.

Writing paper held to be subject to special duty and 10 per cent because of special finish.

Machine Glazed Sulphite wrapping claimed by importer at Philadelphia to be dutiable as printing paper, held by appraiser to be dutiable as wrapping paper, and also subject to special duty of 10 per cent, not being marked with country of origin.

Transfer paper held by appraiser to be subject to 10% additional duty because not marked with country of origin.

Paper imported at Cincinnati claimed to be duty free as standard newsprint paper held by appraiser to be dutiable as printing paper.

Swedish wrapping paper imported at Baltimore held by appraiser to have been undervalued.

Machine Glazed Sulphite wrapping paper imported at Galveston held by appraiser to have been undervalued. The Government in this case contended that there had been secret abating in the foreign market.

Paper Mill Cost Men Meet

Semi-annual Meeting at Holyoke Brings Out Good Attendance to Hear Papers and Discussions on Accounting

THE semi-annual meeting of the Cost Association of the Paper Industry which was held at Holyoke, September 23 to 25, 1926, was well attended and the proceedings gave evidence that the association is performing a useful function and is progressive in its methods. Clifton A. Crocker, president of the Crocker-McElwain Company and Chemical Paper Manufacturing Company, of Holyoke, delivered a welcoming address after the meeting had been called to order by President W. C. Scott, of Dill & Collins Company, Philadelphia at 10 o'clock Thursday morning, September 23.

The Elements of Successful Business

Mr. Crocker said he was in hearty sympathy with the work of the association, being a believer in doing things on a basis of scientific calculation, by which he meant in the most approved, economical and profitable manner. He said that to know what things cost was the most essential element in the conduct of a successful business.

Mr. Crocker lent spice to his remarks by telling stories that threw a light on conditions in the early days when the business of paper manufacturing was run by "guess and b'gosh," as he expressed it. As a case in point, he said that when the United States Envelope Company was formed, one company that joined the organization had based their prices on the principle that if an outside firm could produce and sell envelopes at, say, $1 a thousand, they could sell for less because their manufacturing costs were lower than the other firm. Later, when the facts and figures of the different companies were studied it was found that that particular company was one of the most expensively operated of any and instead of being in a position to produce goods cheaper than the outside firm referred to, their cost of production exceeded every other concern in the group.

Advocates Comparison of Costs

Mr. Crocker said the value of cost figures lay in presenting them in a form that would make it easy to compare the costs of one mill with another. He believed it quite desirable for the cost accountants of one mill to sit down with those of another mill and compare figures. He admitted that such an idea would have been ridiculed in the old days, but today the best business recognizes the necessity of co-operation even among competing firms, though conditions would always exist that would have to be considered individually. While it was discouraging to find that some manufacturers were putting out a product at a lower price than it could be made for, this was something that could be overcome by education. There were certain people in the industry distinguished by what might be called a yellow streak whose methods of competition were based upon a certain cunning that appeared to permit them to overreach their competitors in certain ways, but irregular methods of this kind were never permanently successful, as whatever affects one mill adversely is bound to affect others; and whatever affects the industry adversely as a whole by the action of one man is bound to react to the disadvantage of that man himself.

Mr. Crocker closed his remarks by telling of the pleasure it would have afforded him to sit in with the association and listen to the discussion but as he had a very important engagement he would ask to be excused.

M. C. Dobrow, assistant secretary of the Writing, Cover and Tissue Paper Manufacturers' Associations, was to have presented a paper on "Excess Machine Capacity in the Paper Industry," but Secretary Burke announced that he would be unable to do so as he had failed to get certain data on machine production from Washington.

Westinghouse Budget System

J. Aimé Lavallée, of the Westinghouse Electric and Manufacturing Company, East Springfield, Mass., was introduced to describe the budget system operated at that branch of the Westinghouse organization. He distributed a graph showing a curve plotted against productive labor and expenses and referred to this frequently in the course of his talk. He said that three budgets were used, one on material, one on labor and another on burden. The material budget added a fixed price for every single item of material used.

Material Budget

The first section of the budget is drawn by the purchasing department as it buys the material and is checked by the cost man when the material is received and invoiced. The next part of this, quantity control, is tied up with an inventory budget which tells the management on the first of the month what material should be bought by the purchasing department for delivery in 60 days, what should be scheduled for delivery in the plant in the next 30 days and how much the production department should have in the plant for use in the current month.

Labor Budget

On the labor budget all operations are recorded by time study in decimal hours. Mr. Lavallée explained that this system enabled the company to hire employees at a lower hourly rate. One employee might have as many as ten or fifteen different jobs in a day, and the total earnings would be ten or fifteen or twenty hours. If a man made twenty hours at 40 cents it was the equivalent of 60 cents an hour. A man making only nine hours would be hired at a lower rate per hour.

Burden Charges

Burden charges were more complicated, as loads varied from month to month as well as the class of product. The plan employed consists of basing expense account on productive labor. Mr. Lavallée gave a long and detailed description of these accounts with frequent references to the curve referred to above. On the graph or curve sheet was a column of productive labor figures; for each $100 of productive labor there was a point where the curve met a percentage figure. On the weekly productive labor of $4,000, the curve met at a point of 13 per cent, which meant that on a payroll of $4,000 for productive labor the foreman was allowed 13 per cent of $4,000, or $520, as his budget expense for that particular week. If during the current week or the week afterwards his productive labor increased or went up to $6,000 he would be allowed 9¾ per cent of $6,000, or $585, which would give him a little more in dollars but not 50 per cent more than the previous allowance. On this budget it was estimated that a saving of 20 per cent in factory expense had been effected.

Factory Cost

In the discussion which followed, Mr. Lavallée explained how factory cost was determined. The selling price named by the sales department, which is nothing but the competitor's price, is taken and from this is deducted administrative and selling expenses which represents factory costs. A product has to be made for that price and show a profit.

In the Westinghouse organization, an accountant has to be something of an engineer and mechanic besides a cost clerk and it had been found advisable to take a mechanic or engineer, teach him the clerical end of it and make a cost man of him. This took only a year under the Westinghouse system, whereas it would take five or more years to teach a man out of college who knew only the clerical end of it, all about the machines in a factory.

L. H. Olson, vice president of the American Appraisal Company, Milwaukee and New York, was the next speaker.

He gave an account of the varied operations of his company in ascertaining investments in property, depreciation charges and valuation work generally. The company was established in 1896 and is now thirty years old with, he said, a record of 35,000 appraisals of public utility, industrial, commercial and residential property. A number of pulp and paper firms are served by the American Appraisal Company, which undertakes to solve any valuation problem that comes before it. Mr. Olson gave the names of a number of representative concerns that are listed as clients of his company, among others the American Writing Paper Company, Champion Coated Paper Company, Pejepscot Paper Company, Strathmore Paper Company, Hammermill Paper Company, P. H. Glatfelter Company and the International Paper Company.

AFTERNOON SITTING

At the afternoon sitting Eric A. Cammen, manager of the system department of Peat, Marwick, Mitchell& Co., opened a discussion on "The Uses of Standard Costs," which he said had two meanings (1) ideal; (2) unit of measurement. By a good knowledge of standard costs, which might also be defined as the specifications by the manufacturers of an article, competitive conditions could be met best.

Cost System of Eastern Manufacturing Co.

Ralph B. Knott, of the Eastern Manufacturing Company, discussed the cost system in use at his mill, taking his audience through the different operations followed in building up estimated selling price or total schedule cost. Material costs were based on latest obtainable quotations and conversion costs upon standard beating time and running at a fixed speed on the paper machine at a specified weight and deckle. Invisible weight or shrinkage and recoverable wastes are credited back to the order. In figuring finishing room expenses, 1,000 lb. of finished paper is adopted as an arbitrary standard. Broke allowances being based on nominal finished weights, it is easy to determine the quantity of paper that should be delivered to have available for shipment 1,000 lb. of finished paper. This amount is costed at the total cost up through the machining department. Cost of finishing material, wrapper, cases, etc., are added, rebate being made for broke derived from trimming, imperfections, etc.; at standard broke percentage.

Other Expense Charges

Other expenses taken into consideration are freight, discount, administrative, selling expenses, advertising and interest requirements. To the total or net cost thus obtained there are added federal taxes, sinking fund and dividend requirements. Materials used in manufacture are entered in a subsidiary ledger known as mill store. To each account are added charges for freight and demurrage, etc. An accurate record is kept of the materials used in each beater as furnished. The quantities are calculated at intervals and charged at actual inventory prices into a material adjustment account, the raw material ledger being credited.

Pulpwood piles and fuel oil are the largest items in raw material inventories. A calibration reading of fuel tanks is made periodically. Pulpwood is controlled by cleaning up piles and adjusting the balance according to records.

The control of operating expenses was referred to as the true value of cost accounting to the paper industry. If mills are not departmentalized properly and are unable to control manufacturing expenses through the medium of operating rates sales estimates and product costs lose all meaning.

Departmental Expense System

At the Eastern Manufacturing Company, a departmental expense order system is used consisting of a five-digit numerical code. The first digit signifies the mill location, the next two digits the department, and the last two the classification of expense. Following through the charges machine clothing comes first, issued at cost to operating expenses as it is put on. Miscellaneous material and supplies are issued from general stores to the department consuming them. An itemized report is made at each period of these materials, a copy of which goes to each operating foreman who controls service and labor charges. All power charges for steam or electricity are distributed when possible on direct meter readings or on a percentage basis to each consuming department. Heat and ventilation expenses are distributed on relative floor areas and radiation surfaces. The paper machine was regarded as the prime burden center. Mr. Knott said that the accountant's disposition of machine room general expenses covered a multitude of sins.

A DELIGHTFUL BANQUET

A delightful banquet and entertainment was provided for the members and visitors on Thursday evening. Col. B. A. Franklin, vice president of the Strathmore Paper Company, was chairman and toastmaster and Edward E. Ezold, head of the office sales department of the Crocker-McElwain Company, acted as song leader and induced a number of the office staff of the various Holyoke mills to contribute songs, dances and musical performances toward the gayety of the evening.

Our Debts

The chief speaker was the Rev. A. Crane, of Holyoke, who took as his text "Pay What You Owe." He was felicitously introduced by Colonel Franklin as Seth L. Bush's pastor. The debts Mr. Crane had reference to were the obligations one owed to his employer to see that more than one talent was exercised in service. To politicians elected to office voters owed a letter occasionally to commend them for good work done or to aid them in framing laws.

Benefits of the Cost Association

Colonel Franklin asked several members of the Executive Committee to rise and make themselves known to the audience. First, however, he spoke of the advantages of association work and said that it was the duty of members of the Cost Association to make the executives of mills know the benefits they had derived from attendance at meetings of this kind and they would be sure to be sent to other meetings in the future. They should endeavor to make executives understand their language and speak up to them, for there was a great field to develop in cost work.

The Married Men's Budget

W. C. Scott, president of the Cost Association, was introduced and told some humorous stories of the married man's budget, instancing his own experience when he was restricted to $2 a week, and needing a loan of two cents to make up ten cents for a package of tobacco, he was refused by the bursar of the household. C. A. Jasperson, of the Nekoosa-Edwards Paper Company, was called upon as a member of the Executive Committee to say something and he responded with an account of his detention when leaving Wisconsin on the automobile tour which had brought him to Holyoke, for exceeding the speed limits. He had been mulcted in $15 to appear before the judge next day, but as his time was limited he continued on his way, with the result that Mrs. Jasperson now had a crick in her neck from looking for speed officers.

Other Officers Heard From

James A. Reilly, of the American Writing Paper Company, told how pleased the local committee of arrangements was at the size of the gathering, which numbered eighty-six.

Seth L. Bush, a former president of the association, was called upon to address the gathering, and, in an allusion to some recent political activities of his, said it was too bad he could not welcome the association in the capacity of Mayor of Holyoke, which prompted Colonel Franklin to say that if he wanted to wish him any hard luck it would be to see him Mayor of Holyoke. Mr. Bush congratulated the secretary on the work of the Cost Association in taxation matters and the estimation of wastes in different mill departments.

Secretary Thomas J. Burke was introduced and gave a short talk on the functions of the Cost Association, laying emphasis on the statement that the association stood for co-operation between firms. It was the old story of swapping dollars and ideas. If two men swapped dollars, they only had a dollar apiece, but in swapping ideas, each had two ideas.

He made a plea for a personal membership, saying that if individuals could join, more interest might be taken in the work of the association. Present competitive conditions in the industry made it imperative that correct cost figures be tabulated and it was here that the Cost Association proved its worth. In closing, Mr. Burke made an appeal for a greater display of interest in the association on the part of members. He said he was always glad to get suggestions and should appreciate it if more members would write to him frequently.

SECOND DAY'S SITTING

The proceedings were started on Friday morning with an open forum for the discussion of such topics as "Selling and Administration Expenses" and "Idle Time." In regard to the last-named subject, J. H. Kline stated that in his mill idle time was charged off to profit and loss; it was taken out of the cost before the cost was distributed.

Technical Facts for Cost Men

Miss Helen U. Kiely, director of the bureau of technical research of the American Writing Paper Company, received an ovation when she was introduced to speak to the cost accountants on the technical aspects of paper manufacture. In tying up her subject with a talk to cost men, she said that if each run of paper could be made exactly the same, cost men would have little or no trouble, for production and costs could be standardized for a given locality. The cost of the raw material used in papermaking was approximately 50 per cent of the entire cost.

Miss Kiely gave a most interesting and informing account of cellulose fibers and their reactions in papermaking operations, expressed in a popular way easy to be understood by men who had not specialized in pulp and paper technology. She explained the changes effected in paper by the absorption of water and spoke of the moisture contained in pulp, the behavior of fillers and coating material as well as the function of alum in sizing and the use of bleach. Rosin sizing and sizing problems received careful treatment as did also the use of glues, gums and starches. Fiber losses on the paper machine and the character of water used in carrying fibers were explained clearly and her entire address attracted the interested attention of a keenly observant audience.

Lectures Based on Textbooks

Miss Kiely made incidental mention of a set of sixteen lectures which had been compiled by her from the textbooks on pulp and paper manufacture for the instruction of beginners, each lecture consisting of twenty-five or thirty pages. Dr. Hugh P. Baker, secretary of the American Paper and Pulp Association, in discussing Miss Kiely's paper said he had been greatly impressed with the possible value of such a course of lectures and was of opinion that if the lectures could be published and made generally available they would help the sale of textbooks. Discussing other aspects of Miss Kiely's paper, he said that the well-informed cost man could be a valuable factor in pointing out sources of waste in the mills. The paper was also discussed by W. G. MacNaughton, secretary of T. A. P. P. I., who asked if any attempt had ever been made to balance the material used with the paper manufactured. This might be done by reducing the raw material to a bone-dry state and estimating the finished paper as a bone-dry product. Some papers contained 3½ to 4 per cent of moisture though the usual range was 8 to 9 per cent. The moisture in a paper should conform with the condition under which it is used. Loft-dried paper has usually 2 per cent of moisture. He mentioned the practice of the E. B. Eddy Company, of Hull, Que., in using a bone-dry basis for estimating the materials used and the paper made, the material books being balanced accordingly.

Miss Kiely said she was aware of two mills in Germany that weighed everything going into the paper as well as the finished product, but knew of no mill in the United States that weighed materials and products in this way.

In the absence of A. T. Leander, W. B. Gery, of the Dorr Company, presented a paper on "Save-all Savings" in which he reviewed the essentials of a satisfactory system for the recovery of white water stock, stressing the following points as of chief importance:

1—Keep the machine pit free from contamination and possibility of contamination at all times.

2—Install an efficient type of save-all.

3—Provide the simplest and most positive direct connection between the paper machine and the save-all, thereby reducing the possibility of dirt accumulation.

4—Locate the save-all in a clean, easily accessible place, and be sure that someone checks up on its operation at regular intervals.

5—Aim to reduce the consumption of fresh water. Most mills use more than is necessary. In two mills making the same grade of paper, one is known to use ten gallons of water per minute per ton of paper, whereas the other uses 30 gallons per minute per ton of paper.

6—Educate the operators to regard the save-all as an indispensible part of the paper machine, just as important in its function as the fourdrinier is in its part of the papermaking process.

Mr. Gery brought his paper to a close with a recapitulation of savings effected in different types of mills by the use of the Dorr save-all. This has been previously published in THE PAPER INDUSTRY.

LUNCHEON MEETING

The members then adjourned to luncheon in the Florentine room of the Nonotuck hotel at which Col. B. A. Franklin presided and in introducing Dr. H. P. Baker, the principal speaker, he took occasion to reiterate his views concerning the value of correct cost accounting and the need of educating executives to a better knowledge of the subject. In fact he thought it would be a good thing to put executives through a course of cost accounting if only to show up their weaknesses in regard to the meaning of cost accounting.

New England Paper History

Doctor Baker in a short address on "The Pulp and Paper Industry in New England" took a retrospective glance at developments. He said the story of the growth of the paper industry in New England was a fascinating one and it was to be hoped that in the celebration of the fiftieth anniversary of the American Paper and Pulp Association next February that fitting recognition would be given to the pioneers of New England who had built up an industry that today is a fundamental national industry. The first charter granted by the Province of Massachusetts Bay for the building of a paper mill resulted from the petition of several stationers of Boston late in 1728, but it was not until 1731 that paper was produced in a mill on the Milton side of the Neponset river, some seven miles from Boston. Connecticut did not have a paper mill until after 1750.

Doctor Baker gave statistics from the first census of 1809 which showed that Massachusetts had twenty-three mills producing 95,129,000 reams of paper valued at $270,951. Maine had two mills with a production valued at $16,000. New Hampshire, six mills; Vermont eleven, Rhode Island three and Connecticut nineteen.

Developments in Machinery

He mentioned the first use of the fourdrinier machine in America at the Gilpin mill near Wilmington, Del., in 1817 and then traced the development in papermaking machinery. The origins of papermaking in Holyoke were touched upon. Paper was not made in Holyoke until 1853. Tendencies in development were touched upon after statistics had been given of mills and their production down to 1925. The most interesting change was referred to as the increasing use of woodpulp. Today in Holyoke approximately 550 tons of paper is made per diem, and in the production of this paper there is a daily consumption of 400 tons of woodpulp. It was his conviction that the industry must fortify itself with a permanent supply of raw material in the shape of pulpwood before it can be a permanent industry.

In thanking Doctor Baker for his valuable contribution

to the history of papermaking in New England, Colonel Franklin said it was a very appropriate address for a meeting in Holyoke because it gave a good historical account of early conditions in the States of Massachusetts and Connecticut.

FINAL SITTING

At the afternoon sitting on Friday which brought the meeting to a close, Reed B. Timmers, of Albany, gave a more or less extemporaneous talk on "How Some Mills Have Reduced Cost of Their Insurance" and Thomas J. Burke presented a paper on "The Value of Balance Sheet Ratios to Our Industry."

In a discussion on time and place of next meeting, August, 1927, Detriot was suggested but definite action was not taken. This is a matter which will be decided by the Executive Committee.

York Haven Man Elected President

An election for officers was held, J. H. Kline, of the York Haven Paper Company, York, Pa., being nominated and elected to succeed W. B. Scott as president. Mr. Scott passes automatically to membership in the Executive Committee, one long-term member being displaced.

Saturday was spent in visitations to mills and many members availed themselves of the opportunity to inspect operations at some of the large fine paper mills in the vicinity.

REGISTRY OF ATTENDANCE

The following members and visitors registered during the meeting of the Cost Association in Holyoke, Mass., September 23, 1926:

James G. Barnett, American Writing Paper Company, Holyoke; W. A. Bayless, The American Appraisal Company, Boston, Mass.; C. W. Bidwell, Fort Howard Paper Co., Green Bay, Wis.; R. H. Blanker, Esleek Manufacturing Company, Turner Falls, Mass.; R. T. Boutillier, Knowlton Bros., Watertown, N. Y.; Thomas F. Bromley, Hammermill Paper Company, Erie, Pa.; W. W. Brown, Hampshire Paper Co., Hadly Falls, Mass.; Thomas J. Burke, Secretary-treasurer, Cost Association, New York, N. Y.; Seth L. Bush, Crocker, McElwain Company, Holyoke, Mass.; Stanley Byron, Hammermill Paper Company, Erie, Pa.

E. A. Camman, Peat, Marwock, Mitchell Company, New York, N. Y.; A. M. Chidwick, Crocker, McElwain Company, Holyoke, Mass.; Thomas H. Close, American Writing Paper Company, Holyoke, Mass.; Grellet N. Collins, Dill & Collins Company, Philadelphia, Pa.; Fred A. Cumming, U. S. Envelope Company, Springfield, Mass.

W. E. Daverin, Strathmore Paper Company, Woronoco, Mass.; Charles H. Dinsmore, S. D. Warren Company, Cumberland Mills, Me.

E. H. Ertel, Dill & Collins Company, Philadelphia, Pa.; E. C. Escott, Chemical Paper Manufacturing Company, Holyoke, Mass.

Samuel Gow, B. W. Wheelright Paper Company, Leominster, Mass.; Earl E. Grant, Crystal Tissue Company, Middletown, Ohio.

Leonard E. Hall, Chemical Paper Manufacturing Company, Holyoke, Mass.; N. E. Hallman, Continental Paper & Bag Mill Corporation, New York, N. Y.; S. A. Hammer, York Haven Paper Company, York Haven, Pa.; Ralph B. Heisey, Hollingsworth & Vose Company, Boston, Mass.; Charles E. Hitchcock, Crocker, McElwain Company, Holyoke, Mass.; Cornelius J. Huhn, American Writing Paper Company, Holyoke, Mass.

Arthur R. Ingham, Chemical Paper Manufacturing Company, Holyoke, Mass.

John H. Karges, C. H. Dexter & Sons, Inc., Windsor Locks, Conn.; Thomas J. Keenan, THE PAPER INDUSTRY, New York, N. Y.; G. G. Kennedy, Strathmore Paper Company, Mittineague, Mass.; Helen U. Kiely, American Writing Paper Company, Holyoke, Mass.; H. Paul Kimball, Strathmore Paper Company, Mittineague, Mass.; A. H. King, Crocker, McElwain Company, Holyoke, Mass.; John H. Kline, York Haven Paper Company, York Haven, Pa.; R. B. Knott, Eastern Manufacturing Company, Bangor, Me.; A. N. Kirkpatrick, The American Appraisal Company, Boston, Mass.

J. Aime Lavallee, Westinghouse Electric & Mfg. Co., E. Springfield, Mass.; A. C. Looke, Valley Paper Company, Holyoke, Mass.; W. R. Ludwig, Mead Pulp & Paper Company, Chillicothe, Ohio.

Thos. M. Marshall, Chemical Paper Manufacturing Company, Holyoke, Mass.; F. H. Masselink, Kalamazoo, Mich.; J. L. McKay, U. S. Envelope Company, Springfield, Mass.

John D. Naylor, Strathmore Paper Company, Mittineague, Mass.; L. S. Nold, American Writing Paper Company, Holyoke, Mass.

J. O'Brien, American Writing Paper Company, Holyoke, Mass.; L. H. Olson, The American Appraisal Company, New York, N. Y.; John L. O'Neill, American Writing Paper Company, Holyoke, Mass.; R. W. O'Rourke, American Writing Paper Company, Holyoke, Mass.

Robert L. Page, Robertson Paper Company, Montville, Conn.; M. F. Peterson, U. S. Envelope Company, Springfield, Mass.

J. A. Reilly, A. Writing Paper Company, Holyoke, Mass.; C. V. Ridel, Hollingsworth & Vose Company, Boston, Mass.; H. M. Ritchie, B. D. Rising Paper Company, Housatonic, Mass.; E. H. Roarbach, Harmon Paper Company, Brownville, N. Y.

W. C. Scott, Dill & Collins Company, Philadelphia, Pa.; H. R. Serf, Schmidt & Ault Paper Company, York, Pa.; Roy W. Springer, Bird & Son, East Walpole, Mass.

Oscar L. Tacy, Nashua Gummed & Coated Paper Company, Nashua, N. H.

A. S. Van Horton, The Hamersley Manufacturing Company, Garfield, N. J.

E. A. Ware, News Print Service Bureau, New York, N. Y.; F. H. Webster, Casein Mfg. Co., So. Hadly Falls, Mass.; James Weir, U. S. Envelope Company, Springfield, Mass.; H. S. Whitney, Bird & Son, East Walpole, Mass.; Joseph E. Whitman, S. D. Warren Company, Cumberland Mills, Me.; E. A. Wolcott, Crane Company, Westfield, Mass.; E. S. Woodwin, B. D. Rising Paper Company, Housatonic, Mass.

Westinghouse Engineering Department Reorganized

Reorganization of the general engineering department of the Westinghouse Electric and Manufacturing Company has been announced by H. W. Cope, assistant director of engineering.

The reorganization has necessitated the re-allocation of several engineers, four being elevated to managers of engineering. These are F. C. Hanker, manager of Central Station Engineering; S. B. Cooper, manager of Railway Engineering; G. E. Stoltz, manager of Industrial Engineering, and W. E. Thau, manager of Marine Engineering. S. A. Staege, formerly section engineer in charge of the paper mill section, has been appointed industrial engineer, giving particular attention to the paper mill industry.

Other appointments, also announced by Mr. Cope, are:

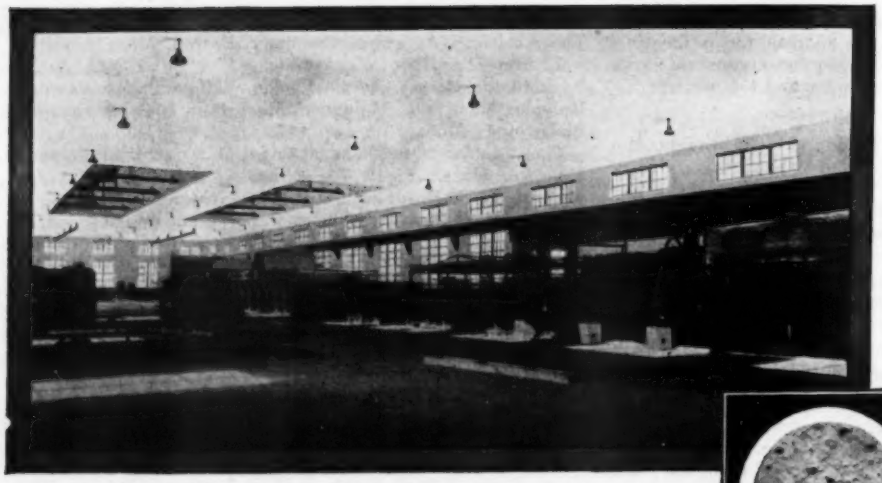
Central Station Engineering—C. A. Powel, engineer, Generating Station Engineering; R. D. Evans, engineer, Transmission Engineering, and C. A. Butcher, engineer, Substation Engineering.

Railway Engineering—H. K. Smith, engineer, Heavy Traction Engineering; G. M. Woods, engineer, Light Traction Engineering, and A. H. Candee, engineer, Gas-Electric Traction Engineering.

Industrial Engineering—E. M. Bouton, engineer, Elevator Engineering; C. W. Drake, engineer, General Industrial Engineering; C. T. Guildford, engineer, Textile Engineering; C. H. Matthews, engineer, Mining Engineering; O. Needham, engineer, Steel Mill Engineering; J. W. Speer, engineer, Material Handling Engineering; W. W. Spratt, engineer, Paper Mill Engineering, and E. B. Dawson, engineer, Electrochemical and Electrometallurgical Engineering.

The appointment of Mr. N. W. Storer as consulting railway engineer in charge of the group handling of Diesel-electric locomotives and rail cars has been announced by Mr. R. S. Feicht, director of engineering.

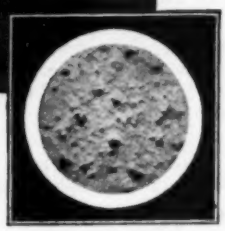
All appointments are effective immediately.



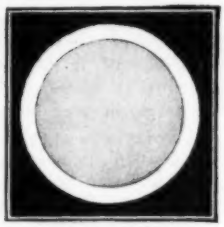
Barreled Sunlight's superior qualities have proven a real economy in this plant of the Frank Smith Paper Co. at Middletown, Ohio

The microscope shows why Barreled Sunlight is easy to keep clean

The photographs of white paint surfaces shown below were taken through a powerful microscope. Each paint was magnified to the same high degree. The astonishing contrast shows why Barreled Sunlight is so easy to keep clean. Its surface is smooth, unbroken and non-porous. It resists dirt and washes like tile.



Ordinary Flat Finish White Paint



Barreled Sunlight

Lustrous – white – washable . . *and this smooth, durable paint costs less per sq. ft. of surface covered*

THE Frank Smith Paper Co. wanted a paint that would assure them correct light-reflection, lasting whiteness, freedom from flaking or scaling, reasonable cost of application, and long service without repainting. They chose Barreled Sunlight.

The lustrous surface of this paint reflects just the right quality of working light—free from glare.

Made by the exclusive Rice Process, Barreled Sunlight is guaranteed to remain white longer than any gloss paint or enamel, domestic or foreign, applied under the same conditions—also not to flake or scale if properly applied.

Containing no varnish, Barreled Sunlight flows freely and may be applied by brush or spray, *at the lowest cost per square foot of surface covered*. Once on the ceilings and walls, it will serve you for years. Its impervious finish washes like tile, and washing does not injure the paint.

Barreled Sunlight is sold in 55- and 30-gallon churn-equipped steel drums, and in cans from ½ pint to 5 gallons. Where more than one coat is required, use Barreled Sunlight Undercoat first.

Send the coupon for illustrated booklet and a panel painted with Barreled Sunlight.

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2 Dudley Street, Providence, R. I.
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Please send us your booklet "More Light" and a panel painted with Barreled Sunlight.

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City.....State.....

THE RICE PROCESS WHITE

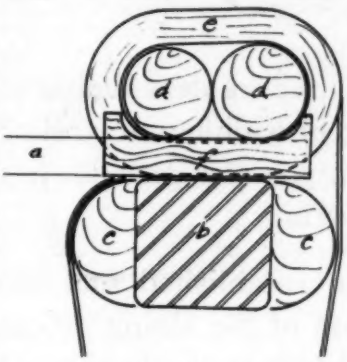
Barreled Sunlight

Reg. U. S. Pat. Off.

Practical Helps for the Mill Man

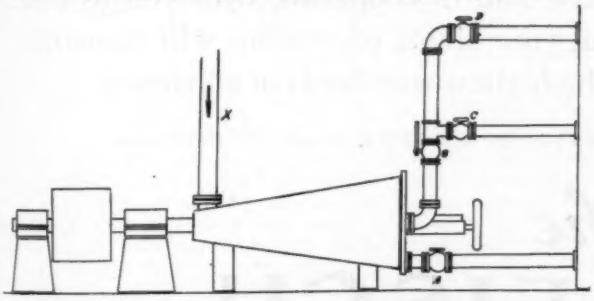
To Protect the Wire

THE forging which is used to raise the suction roll while the wire is being threaded onto the roll may become the source of damage to the wire. The wide wires are very heavy and there usually comes a time in the process of threading these wires onto the couch roll when the wire has to be handled by two men. At this time it is almost absolutely necessary to rest the wire on the forging. The accompanying sketch shows one method of covering the forging so as to protect the wire. In addition a cradle is shown which will take the weight of the wire without allowing the wire actually to touch the forging. The arrangement is shown in section. The forging is shown at (b); (c) (c) represent wooden pieces screwed to the forging and running its entire length. These wooden pieces and the forging are covered with wet felt wrapped spiral, puttee fashion, after the wooden pieces have been screwed in place. (f) shows one of two cradles which are screwed to the forging at such points that the parts of the wire pole which project from the wire will rest in them. The thickness (a) of these cradles is such that the wire cannot possibly touch the forging after the poles rest in the cradles. The poles are shown at (d) (d) and the wire rolled on the poles is indicated by (e).



Control of Hydration

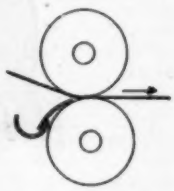
A paper mill superintendent writes us of the advantages of the arrangement of piping leading away from the jordan shown in the sketch. The sketch is not at all to scale and is only to be taken as a diagram to illustrate the principles involved. This arrangement is meant for the last jordan of a battery or for a single jordan, and is used to get a variation in hydration without changing the degree of shortness of the stock. Pipe (X) represents the supply of stock to the jordan. Pipes (A), (C) and (D) represent different discharge pipes from the jordan, each closed by a valve. (B) is a plug valve. Pipe (C) should be some three feet above the top of the jordan and pipe (D) on a level with the source of supply. The idea is to change the degree of hydration in the stock without moving the jordan plug. It is pointed out that on certain grades of paper it is desired to have a short free stock. This can be secured by allowing the stock to issue at (A), the other valves being, of course, closed. On changing from the above, which might be heavy weight book, to light weight book, the stock would discharge from outlet (C) leaving the plug valve (B) fully open. This would increase the degree of hydration. There is no change in the jordan plug setting or in the length of the fibers. The author of this suggestion offers it as a means for changing the degree of hydration with elimination of what he considers dangerous working in and out of the jordan plug for this purpose, as changing the setting of the jordan plug also changes the length of the fibers.



Additional hydration may be obtained, both by retarding the speed of discharge from the jordan by means of the plug valve and by increasing the height of the outlet above the jordan—outlet (D) giving a greater hydration than outlet (C). This superintendent says that where the length of fiber is vital, the constant working in and out of the jordan plug is a menace. Control is easier by the plug valve and the result obtained much more uniform.

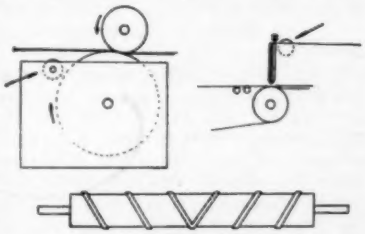
Save-all for the Wet Press

TO A good many paper makers this will look like dusting off the old ones. However, a conversation with a superintendent recently revealed the fact that it was news to him, so perhaps it is to others. If for some reason it is not practicable to put a regular save-all under the wet press, or it is desired to take it away, the substitute shown in the diagram can be used. It consists merely of a trough, with a doctor resting on the bottom press roll having its lower edge in the trough. The doctor can be run alone or a lip of apron cloth or rubber packing can be used. As the water pressed out of the sheet touches this it runs down into the trough. Put the lower edge of the doctor well over into the trough as sometimes the water runs down the under side of the doctor. This device is practically a necessity on newsprint at a thousand feet a minute. It might help out some problem on other papers and speeds.



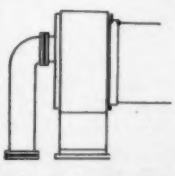
Another Solution to the Foam Problem

A WELL-KNOWN and successful superintendent operating tissue machines contributes the accompanying suggestion for getting rid of the foam in vats on cylinder machines and in the head box of a fourdrinier. This man uses a worm roll to work the foam off to each side. He uses a pretty thick worm and locates the roll at what seems to him the most advantageous point. He suggests that in some cylinder vats it might be desirable to have a worm roll on each side of the cylinder. In the sketches the arrows point to the worm roll location.



Oil on Suction Roll

ON some of the earlier installations of the suction couch roll, it has been found difficult to prevent the oil from running from the bearing out onto the face of the roll and so under the edge of the wire. In one mill this problem has been solved by soldering a galvanized iron collar onto the roll close to the bearing. This collar has a flange which is perhaps one inch high. The collar is very carefully soldered to the roll around its entire circumference. No oil can get through under the collar on account of the solder. Any oil which collects on the flange can be removed by a felt wipe underneath the roll.



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It is an established fact that the smooth operation of the sizing process is necessary to trouble-free production. So Kalbfleisch Engineers are glad to place at your disposal all the information they have acquired from their long and close acquaintance with sizing processes.

The service of Kalbfleisch Engineers is centered upon securing your satisfaction by means of the De Cew Patented Processes with which Kalbfleisch Rosin Size is used.

They are glad to cooperate with you to the end that your sizing operations will measure up to the highest standards of efficiency.

See page 466 in the 1926 Paper and Pulp Mill Catalog

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A Standard Cost System

Steps in Building Up Total Cost of Materials and Estimating Selling Price

By R. B. KNOTT
Eastern Manufacturing Company, Bangor, Me.

IN DISCUSSING the different phases of the cost system in use at the Eastern Manufacturing Company, I should like to follow through the various steps taken in building up our estimated selling price or total schedule cost.

To commence, I will describe briefly the cost as a whole, then I will segregate it and endeavor to explain our method of controlling (1) Materials, (2) Manufacturing Expenses, (3) Waste, (4) Finished Paper Inventories.

Our schedule cost form drawn up for use with the Rand-Kardex visible files is the first of the group you have. Mr. Knott distributed several forms used in his work.

For our mill to fill an order which the sales department has taken for, let us say, this special grade, it will be necessary to beat up two cars of rags—wet sulphite, 30 per cent; dry sulphite, 25 per cent, soda pulp, one roll, etc.—this being the standard furnish for this grade. Following this standard furnish and other standard manufacturing procedure for the manufacture of this grade, if nothing unforeseen happens, a sheet will be obtained which will match the samples submitted by our sales department.

Our furnish or material costs are based on the latest obtainable quotations at the time the schedule is computed. The conversion costs are based upon standard beating time and running at a fixed speed on the paper machine on a specified weight and deckle. Consideration at standard percentage is taken of invisible waste or what we term shrinkage, and recoverable wastes, or broke to us, which we credit back to the order at a figure representative of the present market quotation for stock of the same quality as our waste. Standard running times are submitted by the Production Department based upon actual instructions as issued for the Making Department to operate by. As our machine crews operate on a bonus based on these standard times, it is necessary for the Production Department to have these figures available. Operating rates used are based upon estimated periodical expenses, the compilation and control of which will be discussed later.

In figuring our finishing room expenses we take an arbitrary amount, for convenience in calculations of 1,000 pounds finished paper. As our broke allowances are based upon nominal finished weights, we can easily determine the quantity of paper that should be delivered by the Making Department in order to have available for shipment 1,000 pounds of finished paper. This amount is costed at the total cost up through the machining department. As all of our finishing operations are paid for on a piecework basis, with the piece rates determined by means of time studies, we have at hand predetermined time for a great variety of finishing conditions. These rates translated into time per 1,000 lb. of finished paper, by use of average hourly earnings, form the basis of our finishing operation charges. Cost of finishing materials, such as wrappers, cases, etc., are then added based upon the number of units required to contain the 1,000 lb. at predetermined rates per unit. Rebate is again made for broke derived from trimmings, imperfections, etc., at standard broke percentages. This brings us up to our mill door cost.

Beyond the mill door cost we take into consideration the following expenses, other than mill costs, which we feel the sale of our product should provide funds for: Freight, based on the averaged freight rate paid; discount, based upon 3 per cent of the selling price. The other disbursements are applied to our estimates on a basis of the time spent on the paper machines. These are administrative, selling expenses, advertising, interest requirements—not interest on investment—reserve charges covering inventory adjustments and discrepancies, defective paper, etc. We have now reached our total or net cost to which we add allowances based in the same manner for federal taxes, sinking fund, and dividend requirements, giving us our estimated selling price or total schedule cost.

In order to present as comprehensive a cost as possible, we divide each item making up the estimate into direct operating expenses and indirect expense. It is our practice to charge the paper mill with pulp consumed at market prices and not actual costs on account of our selling pulp to other than our own paper mills. In so doing we pick up an inter-company profit, which of course is washed out in the final balance sheet. There is much to be said in recommendation of this practice, but that is not my subject today. By giving our sales estimates in direct and indirect expenses we wipe out this inter-company profit and present a direct cost covering the entire organization.

Control of Materials

Materials used in manufacture we carry in a subsidiary ledger known as Mill Stores. To each account we charge the material from invoices, adding charges for freight, demurrage, etc.

Most of our commodities are purchased on contract and the question of a continual change in our schedule costs because of fluctuating material costs is not dominating.

When materials are used, an accurate record, in so far as records originating in the mill can be accurate, is made of each beater as it is furnished. These are sent through the balance of stores to the cost department daily. Once a period we accumulate the quantities of each material used and charge them at actual inventory average prices into our Material Adjustment Account, crediting our raw material ledger. The number of beaters of each grade made is tabulated and from this summary we figure the total standard material cost of all paper made. In closing our period work this total is credited to the Material Adjustment Account and charged into our Making Process Paper Account. The under or over absorbed balance of the Material Adjustment Account would then represent differences between actual or standard furnish and variations between average inventory values and the prices on which our schedules were made. This balance is closed in each period to our reserve for inventory adjustments, thereby affecting the period balance sheet and profits. When the rush of a period closing is over, we analyze the differences making up this adjustment and submit a report to those interested covering every grade of paper made. This report made up in comparative form gives the actual and standard furnishes and the variations between them in quantity and value. A summary is also made of the total quantities and values of all materials used, both standard and actual. From this report the paper mill superintendent obtains an excellent resumé of how his mill is running, calling his attention to expensive and excessive substitution of materials.

We receive a physical inventory of all raw materials except items carried in bulk each period, by which, if necessary, we may adjust our ledger balances. Stores, such as wrappers and cases, are not issued to individual orders, but are charged once a period on the basis of a reduction to a physical inventory into operating accounts. Our control in this instance comes in the under or over absorbed balance of these accounts. All repair parts and supplies other than raw materials are carried on maximum and minimum in our general stores inventory. A subsidiary, visibly indexed ledger is kept on these items by symbol classifications. Material issues are required by the storekeeper when these materials are used.

Our largest raw material inventories are represented in our pulpwood piles and fuel oil. We have a calibration reading of our fuel tanks periodically and are therefore able to control these to a nicety. Pulpwood, however, we have to control simply by cleaning up piles whenever possible and adjusting the balance according to our records.

Control of Operating Expenses

In taking up this phase of our work, I believe we are touching on the true value of cost accounting to the industry; because, after all, if we do not departmentalize our mills properly and are not able to control manufacturing expenses, through the medium of operating rates, then our sales estimates and product costs are meaningless. It is of vital necessity that the manufacturing accounting becomes an in-

* Read before the Cost Association of the Paper Industry at Holyoke, Mass., September 23, 1926.

LOBDELL

Improved Micrometer Roll Caliper

THIS handy and accurate instrument is indispensable in the mill that is equipped to regrind its own rolls and will be found equally useful in every paper mill in keeping an accurate check on the condition of the calender and press rolls.

USED in connection with the Lobdell Roll Grinding Machine, illustrated and described on page 366 of the 1926 Pulp & Paper Mill Catalog or in our Booklet on the Grinding & Care of Paper Mill Rolls which is yours for the asking, your rolls can be kept in perfect condition with the least time and expense.

Lobdell Car Wheel Company

Wilmington, Delaware

Established 1836

tegral part of the general accounting scheme, tying in through double entry control with the financial records.

We use a departmental expense order system consisting of a five-digit numerical code. The first digit signifies the mill location, the next two the department, while the last two give the classification of expense. This affords a very elastic system of coding and we have not as yet reached the limit of its possibilities. A supplementary value has manifested itself as we are able to carry our subsidiary property ledger by use of the same code.

The second double sheet form you have is a sample of our periodic operating expense report. Following through these charges we find first our machine clothing, which is issued directly from our mill stores accounts at cost to operating expenses as it is put on. Miscellaneous material and supplies are issued from general stores to the department consuming them. An itemized report is made each period of these materials, a copy of which goes to each operating foreman. A sample copy of this is among the forms you have. Service and labor charges are controlled primarily by the foreman. However, a check may be had from periodic comparisons of labor costs and load factors run. Repair charges are built up from individual repair jobs controlled by our mechanical department. These are tabulated once a period for charging operating costs and a detail report by each job is made. These give the foreman a list of their maintenance expenses. Also, they are of use to the cost accountant in bringing to light possible capital expenditures charged through error to current expenses.

Miscellaneous expense charges are detailed on the bottom of the material and supply analysis.

All power charges for steam or electricity are distributed when possible on direct meter readings or on a percentage basis to each consuming department.

Fixed charges for taxes, insurance and depreciation are built up from departmentalized appraisal records, at standard depreciation rates, estimated tax and insurance requirements, which are distributed on percentage of total investment values.

Heat and ventilation expenses are distributed on relative floor areas and radiation surfaces.

Our share of machine room general expense covers a multitude of sins. We have adopted the viewpoint that the paper machine is in reality the neck of the bottle. To be explicit, all paper of any sort or description must pass over the paper machine, therefore, we have considered this as our prime burden center. Grade distinctions are very evident at this point, because an expensive paper is run very slowly over the machine, whereas a cheap paper is run as fast as possible. I have a rough chart, which, of course, does not cover all departments charged in this manner but which does give a general idea of our distributions. The majority of our indirect departments are charged to pulp mill general, paper mill general or mechanical department expenses. The paper mill general account is charged in total to the machine room general expense account. This in turn is distributed over the paper machines and through their operating rates into the cost of the paper as it is made.

The amount absorbed by hourly rate is the credit returning to the operating department covering the standard cost of paper run. This is based on the quantity of paper in this instance reeled up at the end of the paper machine at standard times.

The under or over absorbed expense figures represent the efficiency of our operating department and the accuracy of our rates. These figures, if abnormal, are easily analyzed making it possible to find the cause of the discrepancy and indicating whether a change is necessary in standard times or operating rates. Idle hour charges or credits are computed from daily operating and lost time reports. The other items shown are of a statistical nature and I will not delve into their origin.

In passing from this form you will note the figures in the extreme right-hand column. These are averages for the previous year. Although a financial budget is prepared annually, up to the present time we have not attempted a departmental, budgetary control. These figures, however, serve a similar purpose and give an excellent check on current operating expenditures.

A sample of our work sheet used in developing operating rates is the last form you have. The items of expense are taken from our operating departmental reports and I believe these have been fully covered through explaining operating and idle hour expense control. The columns covering direct or indirect expense are used in breaking up our schedule costs. The last column is used in analyzing schedule costs into the various elements of expense.

Without a doubt, one of the hardest losses to control and also one of the largest items to represent actual savings is the item of broke. We appreciate this factor and therefore take all precautions to fully understand these losses. We keep an accurate record of each order as it is made and finished. Once a period we submit a report to the making department covering excess broke and shrinkage variations in dollars and cents by grade. Biweekly we present a report of all orders completed covering the finishing room losses by finish and grade. Weekly we draw up a report of broke by operations which is used in connection with our weekly foremen's meeting. Daily we report the paper machine broke made the previous twenty-four hours by shifts. This is used in morning conferences with the men responsible for the running of the making department.

These reports are all distributed in typed form to interested parties, also a set of charts are kept for each of these waste reports. From these reports an excellent control of this item is had and from yearly and semiannual reports, standards are derived for use in compiling schedule costs.

Our balance of stores ledgers are of the post index, visible equipment type and are set up in grade, color, finish and size and weight specifications by finish order numbers.

Quarterly we receive an inventory from the balance of stores which when priced is extended by using our tabulating equipment, before verifying our controlling account balances.

Inventory discrepancies in our records are very small, owing to the fact that our balances are built up on finished paper costed at schedule cost prices, sales being costed by use of the same cards, both based on nominal weights. Last year for all mills our total inventory adjustments of paper were less than a half of one percent.

If you will allow me a few more minutes I would like to give you just a few comparisons taken from our experience of actual and standard cost system.

(1) During the time we were operating on actual costs we had as many as twenty-three in the cost department. Today, with more work flowing through the department, we have fourteen. This difference presents a saving of at least $10,000 per annum. Although the other cost department operations have switched about, the total number of clerks engaged on this work has not changed. The entire reduction therefore of nine clerks may be attributed directly to the change from actual to standard costs. Of this six were released from the finishing end, two from the making end, and one from the conversion of half-stuffs.

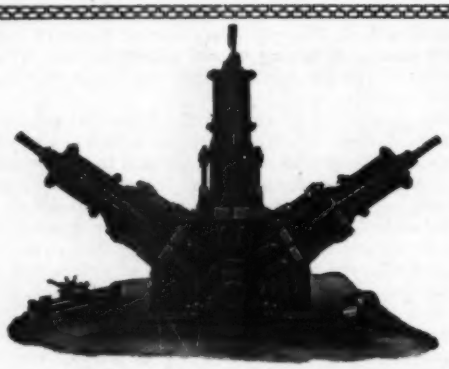
(2) Our cost of paper sales figures are now delivered to the treasury department three or four days after the period closing. Whereas, with actual costs it was well into the second week before these figures were available. At the present time we require nine working days to effect a complete period closing of the mill books. Pulp mill, bleach and caustic, also box shop costs are practically actual and require a longer time than our paper costs.

(3) When a cost estimate is submitted for use in establishing a sales price, the same cost in all probability can be used for costing production and sales, thereby saving the reworking of these figures.

Finally, please let me assure you that we still have complete records so that we are able and continually do work up actual costs to check our standard costs with existing conditions in the mill.

The Nacional Papelera Compania of Havana, Cuba, has purchased the entire paper mill equipment of the Southern Cotton and Paper Company, Chattanooga, Tenn. This includes beaters, jordans, machines and cutters. It is reported that the Cuban firm is to manufacture paper to be converted into bags.

C. H. Johnson has been appointed engineer, Service Department, of the Timken Roller Bearing Co. He will have direct charge of the installation of Timken bearings in automotive and industrial applications.



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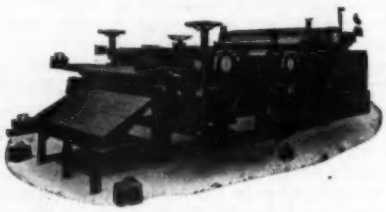
Built in Three Sizes

Taking wood 24", 30" or 32".
Bridge-trees—Are well proportioned.
Flanges—Made of steel, 40" diameter.
Hydraulic Cylinders—Copper lined, 12", 14" or 16" diameter. Valves are quick acting and leak proof.
Pillow Blocks—22" length of bearing.
Pockets—Very heavy, designed particularly for free discharge of pulp, and fitted with our RENEWERS.
Service—Continuous distinctive service is always assured.



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The standard machine for producing high density laps continuously.

When dry stock is not desired, use it as a labor saver—one man can run it and handle a tremendous daily capacity.

The Single Press may be used for the same purpose.

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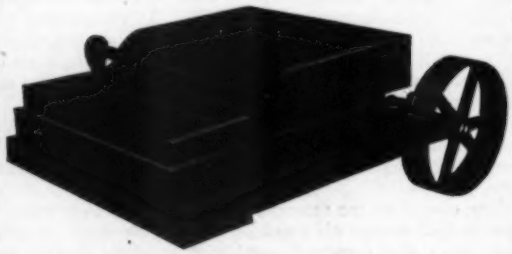
(Patent pending)

Efficient Simple

This long sought machine will deliver chemical pulp from 15% to over 25%, as you may desire. It is entirely self contained, requiring no prethickener or vacuum pump. The flake form in which the stock is delivered is ideal for bleacher, beater or storage. Figures of our trial run are available at your request.

We have an attractive offer to make to you—you take no risk



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GLENS FALLS, NEW YORK

See pages 344 to 345 in the 1926 Paper and Pulp Mill Catalogue

News Briefs from Washington

Consular Reports

Norwegian Strike Ended.—The Norwegian pulp and paper mill strike has been terminated according to a cable received from commercial attache Sorensen, at Copenhagen. Mill operations were resumed immediately. The question of wages has been scheduled for future settlement by voluntary arbitration, presumably through representatives of all parties concerned.

British Mills Feel Strike Effects—It has been reported that the British general strike has had a somewhat adverse effect on the country's paper industry generally because of the high price of coal. Many mills are said to be closed or operating on reduced schedules pending the time when the price of coal is more nearly normal. Some mills have installed oil-burning equipment while others have continued on imported coal at increased cost. The most acute trouble has been experienced by the mills manufacturing wrappings and the finer grades of paper.

A late development in the British paper trade is also a manifested increase in demand for mill-brand papers of many grades. The mills themselves have sensed this fact and they are making a strenuous effort to induce jobbers and retailers to market branded packages rather than to sell under their own names.

Brazil Reports Newsprint From Eucalyptus Practicable—It is reported by Consul Walter Thurston at Sao Paulo, Brazil, that the American engineer who went to Brazil some time ago to investigate the feasibility of manufacturing newsprint on a large scale from eucalyptus has found it practicable. He has so reported to the Companhia Paulista de Estradas de Ferro, which owns large tracts of eucalyptus in the State of Sao Paulo, and this concern plans the erection of a suitable mill at Villa Americana, about 150 kilometers inland from Sao Paulo, where the water supply is said to be good. Further details are not yet available, but is is expected that the equipment will cost in the neighborhood of $750,000.

Market Stagnation in Czechoslovakia.—Consul C. S. Winans at Prague, Czechoslovakia, reports a marked stagnation in the Czech pulpwood market owing to decreased purchases by the German pulp mills. The recent economic disturbance in Germany has forced purchases down to a minimum and there is at present little sign of recovery.

Current Situation in Sweden.—The Swedish pulp market showed a slight recovery in July in contrast to the dullness evident during the early part of the year. Sales of sulphite pulp in July reached 40,000 tons, about half of which was for 1927 delivery. Of this, Great Britain took 19,000 tons and the United States 12,000 tons. The increased British purchases are stated to be due to the resumption of operations in a considerable number of British paper mills which are now operating on imported coal or which have had oil burners installed. Sales of sulphate pulp in July totalled 15,000 tons, of which 11,800 tons were for 1927 delivery. Prices to American buyers are quoted at from $3.00 to $3.10 for both strong sulphite and kraft per hundred pounds, ex dock.

Commercial Attache T. O. Klath at Stockholm also reports that the creditors of the recently bankrupt concern of Ytterstfors-Munksund Aktb. at a recent meeting approved a proposal made by the receivers to sell the property and erect a new pulp mill having an annual capacity of 30,000 metric tons. The cost of this project is estimated at 10,500,000 Swedish crowns. The mill will be located at Skuthamm on the Pite River. In addition, the capacity of the mill at Lulea will be increased from 21,000 to 50,000 metric tons per year. Hissmofors Aktb., in Jamtland also plans to build a new sulphate plant. It will be constructed in order that they may better utilize material which can not now be used for sulphite production. It's annual capacity will be from 6,000 to 8,000 metric tons.

Overproduction in Japan.—During 1925 the new paper machinery installed in Japanese mills showed a total of 818 width inches, the actual number of machines being 8. Present plans include the installment during 1926 of two additional machines, one of 112 inches and one of 142 inches. During 1925 the total production of paper, exclusive of strawboard, in Japan, is estimated at 517,650 short tons, as against 470,845 tons in 1924. At the present time production is considerably in excess of consumption and the market is suffering from a severe depression. This situation is further aggravated by a rise in Yen exchange which has stimulated paper imports.

In view of the slowness of the market to recover from the seasonal depression of the last three or four months and also because of the downward tendency in prices, the associated Japanese mills have agreed to curtail production in such lines as first and second grade printings and vellum, both of which have been seriously affected. According to the agreement, which can be cancelled at any time, the mills will decrease production by 12 per cent (approximately 2,000 tons per month) for one year beginning August 10. Present stocks on hand are reported to be 14 per cent above normal, with imports during the first half of 1926 30 per cent greater than imports during the corresponding period of 1925.

Poland Suffering Market Depression.—Acting Commercial Attache Allen at Warsaw, Poland, reports that following a strike in the Polish printing industry the paper market has fallen off from 2 to 3 per cent with the mills selling on terms of 50 per cent cash and the balance at 60 or 90 days.

Leipzig Fair Sales Unsatisfactory.—Assistant Trade Commissioner Nash, at Berlin, reports that in general business was bad and sales unsatisfactory at the Leipzig Fall Fair, a uniform complaint from German paper and paper goods exhibitors. Many of the exhibits were striking, especially the toys, carnival goods, favors, children's books, and so on, but many visitors commented upon their impracticability. A few novelties and stationery articles of medium grade sold well, but despite concessions in terms, other sales were relatively small. Prices were on an average of 10 or 15 per cent cheaper than at the Spring Fair.

Developing Fibre Wallboard Purchase Specifications

At the request of the Federal Specifications Board, the Bureau of Standards, through a special research, is assisting in the development of a purchase specification for fiber wallboard. Ten manufacturers are co-operating in this work by furnishing authentic samples of their products and acting in an advisory capacity. Both the laminated and homogeneous types of board are included in the tests.

While the bursting strength is commonly taken as a measure of the resistance of the board to strains incident to usage, the research made in this direction indicates that a better measure, more in line with service conditions, is obtained by a flexural strength test. This method consists of suspending a strip of the board on two parallel rods and applying an increasing load at the center of the strip through a rod placed across the top parallel to the other rods until the strip breaks. The load required to break various boards, using a three inch strip, varied from 7 to 18 pounds per three-sixteenths inch thickness for the weaker direction of the boards.

An important consideration is the possibility of the board warping after erection as the result of expansion caused by the absorption of moisture from the surrounding atmosphere. This can be determined by immersing the board in water for a short period. A simple extensometer was so designed that several specimens at a time could be tested for degree of expansion by measuring the expansion upon subjecting them to a moisture laden atmosphere. The actual expansion of boards so far tested does not correspond with the amount of water they absorb when subjected to the immersion test. Additional data are being obtained upon this point and it is believed that when they are available an adequate specification can be recommended.

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Deinking and Washing Waste Paper Stock*

By J. J. O'CONNOR
Mead Pulp & Paper Company, Chillicothe, Ohio

IN THE course of the past ten years, a considerable amount of work has been done on the conversion of printed paper stock into suitable raw material to be used again in the manufacture of paper. I am not going to review the various phases of this work, but will submit to this gathering a few thoughts and facts which have been recorded by my associates and myself during the past five years.

Process to Be Used Depends on Kind of Paper to Be Deinked

Consideration of the kind and quality of old papers to be deinked is very important if a uniform product is desired. The gathering of printed paper is more carefully accomplished at the present time than it was five years ago. Waste paper dealers have specific sections in the country from which they obtain a regular supply of over-issues, used magazines, booklets, catalogues, etc., of all descriptions. To be sure, this supply varies from time to time, but on the whole if the paper manufacturer buys his stock from a dealer who has a standard source of supply, he will be assured of a more uniform quality than if he purchases old papers from dealers located in different sections of the country. This will be true in the future more than it has been in the past because advertisers and publishers are standardizing their distribution. Magazines which are greatly in demand in the North may have very little popularity in the South. It is, therefore, essentially necessary to purchase your waste papers from dealers located in the same advertising or distributing section.

Printed coated paper is the easiest grade to deink, owing to the fact that the ink is bound to the coat. It is less difficult to dissolve the casein or coat binder and separate it from the base sheet than it is to separate the ink from the fiber of a sheet which is not coated. When the coat is removed from the base fiber stock, it acts as a carrier for the ink and with the free character of the clay and satin white in the coat, gives a condition which is ideal for washing. One objection to coated paper, however, is the higher ratio of mineral matter to fiber as compared with papers which are not coated.

Next to printed coated paper, soft sized, high ash-content machine and supercalendered book papers are a very desirable grade. Papers of this description will defiber quickly, and the ash or fiber in these sheets acts in a similar way to the coated material on a coated sheet when it is deinked.

As the ink resistant quality of a sheet increases it becomes more difficult to defiber and deink. Lithographic poster papers are a typical example of this class. Hard sized papers must be sorted out unless the process is particularly adapted to deinking of hard papers.

It hardly seems necessary to mention the fact that all groundwood sheets must also be sorted out if a good quality of finished stock is desired.

Soaking or Cooking Operation

Saponification of the oil or ink binder is the most important objective in this operation. Of secondary importance is the defibering of the paper to facilitate washing.

Care must be exercised here not to effect the papermaking qualities of the fiber by impregnation with the saponified oils or hydration of the fibers by prolonged treatment. The first condition is more likely to take place when the pressure method of cooking is used. We have, however, obtained very poor results in the laboratory when 5 per cent of caustic was used on the paper basis.

Results of Laboratory Trials

Sodium hydroxide gives quicker softening of paper stock than sodium carbonate. Its action is also more complete. Two and a half to three and a half per cent of sodium hydroxide gave better results than 7 per cent of sodium carbonate. Sodium hydroxide gave a better color to hard sized and coated stock. Sodium carbonate, on the other hand, gives a slightly better color with soft sized stock. Sodium hydroxide, in quantities mentioned above, did not cause as much foaming as sodium carbonate.

When sodium carbonate is used in the cooking process, part of the carbonate is converted to the bicarbonate. Sodium hydroxide is a more efficient alkali to use in the operation than sodium carbonate. Sodium bicarbonate has very little saponifying value.

Excessive quantities of sodium hydroxide tend to slow the stock, making it very difficult to wash satisfactorily.

The use of lime and soda ash to form caustic soda for the cooking operation is not practical because of low causticising value of the lime under these conditions (60 per cent). A more serious objection is the presence of lime and carbonate which reacts with the inks and forms a product very hard to wash from the fiber.

Our Present Mill Procedure

Three thousand five hundred gallons of clarified water are run into a vertical concrete tank to which is added 90 lb. of sodium hydroxide and 2,300 lb. of sorted papers. Steam is turned on during the filling operation and the temperature is brought to 200° F. The mixture is agitated for anywhere from 30 to 100 minutes, depending on various factors. The speed of the agitators is 30 R.P.M., which we have found to be very satisfactory. On the side of the tanks we have placed stationary arms to break up the tendency to swirl. At the end of this process the paper is perhaps 75 per cent defibered.

We then drop the mixture into our defibering unit, which consists of a conical-shaped tank with a centrifugal pump connected to the apex. The discharge line from the pump is piped back into the lower section of the tank giving a volcanic effect to the stock when operating. Temperature of the mixture at this point is 180° to 190° F. Originally we were of the opinion that perfect defibering meant complete deinking. Today we know this is only of secondary importance. After circulating in the defiberer for 20 to 40 minutes, the original paper is practically all defibered, but saponification of the oils in the ink is not complete. At least that is our conclusion from observations made on Monday mornings when the cooked stock has stood for several hours (from 12 to 24). The time factor seems to be very important in connection with complete saponification and deinking.

Screening and Washing

Before screening, the hot stock (temperature of 180° F.) is diluted with water to a consistency of 0.7 per cent. At times we have found that fresh water used at this stage gives better results than clarified water (5 lb. to 6 lb. per 1,000 gallons). This clarified water is a mixture of the effluent from the Oliver, overflow from machine white water chest and the return from second units of old paper washers.

When clarified water with a pH value of 0.3 to 0.5 lower than the fresh water is added to the stock at the riffles, it reduces the pH value of the mixture and effects the ink emulsion to such an extent that separation of the ink from the fiber is not accomplished as well as when fresh water is used. The last traces of the printer's ink are the most difficult to remove from the fiber. These particles, however, make the difference between a fair stock and perfect stock.

If the stock gets too slow in the preceding steps, it will not pick up on the cylinders and very poorly washed stock will result, with low production. Foaming and frothing will cause the same objectionable conditions. The saponified oils must be kept in an emulsified state to get efficient washing.

Oliver Filter Used as Save-All

After washing, the stock is bleached in a large concrete chest at a consistency of 4.5 per cent with about 1.5 per cent bleach. From the bleaching tank the stock is pumped to an Oliver filter. This filter acts as a save-all and remover of soluble excess bleach from the stock. We obtain better operation with the filter than we did when we furnished the bleached old paper stock without an after washing or filtering.

I have attempted in a very brief way to cover our experience in the deinking of old paper stock and hope that these few remarks will be followed with similar contributions on the subject.

*Read at the fall meeting of the Technical Association of the Pulp and Paper Industry, York, Pa., September 16, 1926.

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Superintendents Hold Joint Meeting

At an Elevation of 1,400 Feet, Parker-Young Company's Mill in Mountains of New Hampshire Attracts Large Gathering

THE Connecticut Valley Division of the American Pulp and Paper Mill Superintendents' Association held a very enjoyable joint meeting with the Northeastern Division at Lincoln, White Mountains, N. H., on Saturday, October 2, 1926. The Parker-Young Company operate pulp and paper mills at that point, which is elevated 1,400 feet above sea level. The papers made are envelope white wood and high-grade manilas, as well as a line of sulphite bonds. In addition to a three-digester sulphite mill, and a three-machine paper mill, a groundwood mill is also operated, though it was shut down at the time of meeting because of low water; a small groundwood plant at Livermore near Plymouth is drawn upon for supplies when the Lincoln mill is idle.

Events of the Meeting

The original plans provided a business meeting for 3:30 o'clock on Saturday afternoon, following a special train trip over the Parker-Young Company's logging road into one of the big stands of mountain timber owned by the company, but the train trip had to be abandoned on account of unfavorable weather, rain falling all day long, with the mountains shrouded in mist.

The entire afternoon was given up to a talk on the manufacture of dyestuffs and medicinal compounds from coal tar by August Merz, of the Heller & Merz Company. This was illustrated by motion pictures taken especially for the meeting, which gave animated descriptions of routine operations in a great dye factory. At the close of his demonstration of large scale chemical manufacture, the annual meeting of the Northeastern Division was held when new officers were chosen to serve during the ensuing year, Victor E. Fishburn, of the Groveton Paper Company, Groveton, N. H., being elected to succeed Killey E. Terry, as chairman of the division, and Andrew C. Cloudman, of the S. D. Warren Company, secretary-treasurer in place of Herbert W. Stanley, of the Parker-Young Company. Prof. C. A. Brautlecht, of the University of Maine, was named first vice chairman, with Herbert W. Stanley and George W. Verrow, second and third vice chairman respectively.

Entertainments

The attendance was gratifyingly large and remarkable by reason of the great number of ladies it included. The Committee of Arrangements was generously assisted by Heller & Merz Company in making the meeting the social and scientific success it proved to be. The projected trip to the logging camps of the Parker-Young Company having been abandoned on account of the weather, card parties were organized for the ladies, while a few golf enthusiasts undaunted by rain hied them to the golf links and drove the pill to their hearts' content. In the evening a banquet was served at the Lincoln Hotel, owned by the Parker-Young Company, at which former Mayor John H. White, of Holyoke, presided as toastmaster with more than his usual ability. His witty introductions and side remarks almost overshadowed the efforts of a professional entertainer who held the attention of the members and guests till midnight with what seemed an endless stream of humorous and philosophical observations, but mostly humorous and such as kept the audience in constant laughter.

The Manufacture of Paper Dyes

The business meeting, at which Mr. Merz gave his highly interesting account of the history of developments in coal tar chemistry and showed the manufacture of paper dyestuffs, was opened by Herbert W. Stanley, chairman of the Committee of Arrangements, who made a brief welcoming address in which he recounted the advantages to be gained from the dissemination of papermaking knowledge through superintendents of mills coming together on occasions like the present one to swap problems and ideas. He then introduced Mr. Merz, who proceeded at once to outline his subject, first reminding those present that coal-tar chemistry was a field so vast that he could not hope to tell them all about it even if he tried. What he should do would be to impress them with the economic aspect of the subject and show how hand tests of tinted papers were made in the laboratories of the Heller & Merz Company.

The Story of Ultramarine.—Ultramarine, which was originally obtained from lapis-lazuli, a rare mineral found chiefly in Asia, and composed of sulphur compounds and silicates of aluminum and sodium, as applied to the blue color obtained from it, was the most expensive of colors till Heller & Merz began to prepare it artificially, his firm being first in the United States to fabricate the pigment. Lapis-lazuli was brought from beyond the seas, which explained the origin of the name ultramarine, since ultramarine means "situated or beyond the sea." The manufacture of synthetic ultramarine was suggested by a French chemist discovering a blue ring in taking down a lime kiln. He wanted to know all about it and soon found that the blue encrustation was the same as lapis-lazuli. Then a French society offered a prize for the artificial production of ultramarine and this was awarded to Guimet, of Tolouse, in 1828, four years later. The method of manufacture consists of using a mixture of sulphur, china clay, soda ash and charcoal with some infusorial earth and heating the well ground and mixed ingredients in a muffle furnace. At the end of several hours' heating, blue ultramarine is formed, which is washed, ground and dried. From a price fo $20 an ounce, the cost of ultramarine was reduced by the artificial process to 20c a pound.

Coke Oven By-Products.—Turning to coal tar, Mr. Merz pointed out that charcoal made from wood was a better fuel than wood, and coke from coal better than coal itself. For a long time no use was made of the gases, gas liquors and coal tar formed in the production of coke, these being wasted as sulphite liquor is today. When coal is coked, the products are coke, 72 per cent; ammonia, 22 per cent, and tar, 6 per cent of the coal used. He gave some astonishing figures of the value of products now recovered. The value of the tar was was $19,000,000; ammonia, $32,000,000; gas, $97,000,000; light oils, $14,000,000; benzol motor fuel, $18,000,000; intermediates, $50,000,000; dyestuffs, $50,000,000; lake colors, $5,000,000; medicinals, $5,000,000; flavoring extracts and perfumes, $2,500,000; synthetic tanning extracts, $28,000,000, all of which was formerly wasted. Some day, said he, the paper industry would find a similar Golconda in the recovery of waste sulphite liquor.

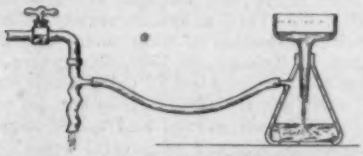
Coal Tar Products.—Of the 155 constituents of coal tar only ten were good citizens, as Mr. Merz expressed it. These were the "crudes" or basic materials for dyestuffs, chief of which was benzine. When benzine is boiled with nitric acid and sulphuric acid, nitrobenzine results, and this when treated with hydrogen gives aniline. By combining chlorine with benzine, monochlorbenzine is produced, and this treated with nitric acid gives a black dye which is used for stockings. Dichlorbenzine was useless as a by-product till it was discovered to be a good remedy for peach borers and it is now the active constituent of a great many proprietary moth destroyers. Another of the crudes is phenol or carbolic acid. When phenol is treated with nitric and sulphuric acids, picric acid is formed. Phenol is used very little in dye manufacture. Among the medicinal products of recent introduction he mentioned mercurochrome, which was a close relative to the red dye used for making ink; and hexylresorcin, a new disinfectant which does not break up and become active in the human system until it reaches the intestines. The further dependence of medicinal compounds on coal tar was illustrated by a reference to acetanilid, a constituent of all headache powders, which is made by boiling the aniline oil obtained from coal tar with acetic acid. He also spoke of salicylic acid, which is merely carbolic acid or phenol treated with carbon dioxide.

He touched on the manufacture of artificial resins and lacquers, instancing bakelite, a condensation product of phenol and formaldehyde. He said that Dr. Leo H. Baekeland, the inventor, was probably looking for a superior disinfectant, but the product turned out to be an inert mass which on a little further research resulted in bakelite in its several forms—solid, semisolid and liquid.

Accidental Discoveries.—Mr. Merz gave a broad survey of coal tar chemistry, and he instanced other accidental discoveries besides bakelite. In 1856 William Henry Perkin was looking for synthetic quinine and found an aniline dye, the first

A Penny in a Funnel Means Dollars on a Filter

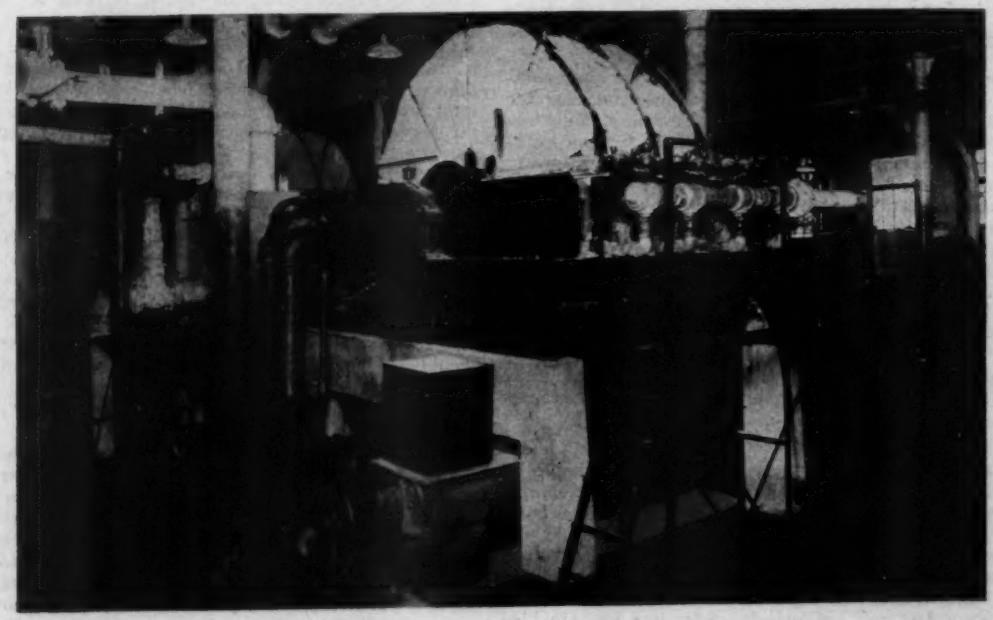
HAVE your chemist go to some point where white water can be sampled. Have him take an ample and representative sample. Have him filter it through an ordinary laboratory funnel.



Every penny's worth of fibre caught in this funnel indicates the dollars that can be saved by a commercial filter.

Then arrange with our nearest office for a demonstration of the Pulp Type American Continuous Filter. We have portable units that accurately indicate the savings obtainable by the standard machines.

Both tests are easy to make. They will show you how the fibre now being lost can be recovered—profitably.



HOW THE PULP TYPE AMERICAN CONTINUOUS FILTER WORKS

The fine fibres in the white water are caught on the metal mesh which covers the filter sections. This layer of fibre in turn acts as an additional filtering medium and keeps the very fine fibres from passing through. This continues until a suitable size mat is built up. All this is done automatically while the filter leaves are rotating. The water that is sucked through the filter is practically free of solids and can be re-used on showers or at other places if desired.

UNITED FILTERS CORPORATION

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fast dyestuff, Perkin's mauve. Being of an inquiring turn of mind, like all chemists, he investigated why mauve should stick to silk or wool and not to cotton. He pursued his studies and in 1868 discovered artificial alizarine, and then eosin and other aniline dyes. Mr. Merz traced the development of synthetic dyes of which 1,000 chemically different individual substances were known, but of which there was need for only 200. Of the 1,000 single dyes there are upwards of 5,000 brands. He spoke of the wonderful development of the dye industry in the United States since the war and alluded to the shortage of dyes which was felt so acutely by papermakers in 1914. He said that if the people of the United States who were dye consumers did not see that domestic dyestuffs be given the preference the time might come when they would find themselves in the same position that they occupied in 1914.

"Born to the Purple."—Before passing to the motion picture exhibit he touched briefly on the manufacture of artificial indigo, and made an interesting reference to the original purple of Tyre. This precious dye was the secretion of a Mediterranean snail. So rare and expensive was Tyrian purple that only royalty could afford to wear purple linen, and hence the origin of the saying, "born to the purple," as applied in ancient times to the offspring of kings and princes. The coloring principle of the dye secreted by the snail was discovered on investigation to be a di-brom indigo, similar to the substance extracted from madder, but having two atoms of bromine.

Shows How Dyestuffs Are Made.—After the motion picture operator had shown several reels of factory and laboratory scenes at the Heller & Merz Company plant in Newark, N. J., Mr. Merz gave a practical exhibition of how dyestuffs were made. In plain view of the audience he mixed the required chemicals to produce a batch of orange yellow dye which was afterwards used in making hand tests for tinted papers. He explained the application of dyestuffs in the tinting of papers and classified the dyes as basic, acid and direct. Basic dyes were the most brilliant but at the same time the most fugitive; acid dyes were faster and sometimes fixed themselves. He cautioned against the use of mixtures of basic and acid dyes, saying that they did not agree, but fell out and were precipitated. He also uttered a warning against the use of dyes in dry form. A basic dye in particular should never be added to the furnish without being first dissolved in water. It was always much safer to furnish a color in solution. Hard water was apt to cause trouble with basic dyes, and the remedy for this was the addition of a little acetic acid. The need of soft water was generally recognized and some of the textile mills had gone to enormous expense in erecting water softening plants.

Testing the Hardness of Water.—Mr. Merz said that every mill ought to know how much lime was in the mill water before adding rosin and alum to the beater. With hard water a rosin lime compound was formed. The Heller & Merz Company supply a simple method for making a lime determination and Mr. Merz said he would be glad to send directions and an outfit to those who should leave their names and addresses for that purpose. He gave a short practical lesson in water analysis, using a standard solution of soap for the determination or diagnosis of hardness. A drop of this solution added to an ounce of the water under examination should froth if the water is very soft; if it does not froth or foam until three drops of soap solution are used the water might still be regarded as satisfactory, but each added drop of soap solution means an added degree of hardness till foaming shows on shaking. (See THE PAPER INDUSTRY, June, 1926, p. 432.)

Principally because he avoided the technical language of the chemist, Mr. Merz's descriptions of dyestuffs and their properties and his water analysis talk were clear and readily understood by a keenly interested audience. At the close, on motion of Herbert W. Stanley, he was given a rising vote of thanks.

Speakers at the Banquet

A banquet was served in the evening at the Lincoln Hotel which lasted till midnight. The speakers were Victor E. Fishburn, chairman-elect of the Northeastern Division; Charles N. Mooney, spokesman of the Connecticut Valley Division; Benjamin T. Larrabbee, who responded to Mr. Mooney's acknowledgments of the hospitality of the Northeastern Division; Fred J. Rooney, national president of the American Paper and Pulp Mill Superintendents' Association, who added his own acknowledgment to those of Mr. Larrabbee's to the Parker-Young Company for their co-operation in making the meeting the enjoyable and successful one it was. The principal speech was made by Alfred Stanley, general manager of the Parker-Young Company, who gave many historical details of the founding of the mill by James Everill Henry in 1892, and its later development. He named Messrs. Boyle, Doyle, Pentland and Doherty as four of the original employees of the firm who were still on the payroll, this being an evidence of the good relations that have always prevailed between the firm and the workers in the mill.

In introducing the next speaker, August Merz, Toastmaster White recalled the fact that when he was an assistant to John J. Manning in Holyoke forty years ago he had written letters to the firm of Heller & Merz in regard to orders for dyestuffs. He complimented Mr. Merz on the ability he had shown in talking to the superintendents that afternoon on such a highly technical subject as dyestuffs in a language so clear and simple as to make it intelligible to all. Mr. Merz made graceful acknowledgment of the privilege which had been extended to him of addressing the meeting and contributing to its success, after which Willard Scott, of Boston, entertained the gathering with an address abounding in wit and humor and yet not lacking in sound and sensible observations, which was properly appreciated by a most friendly audience.

Some forty-nine members, including a number of the ladies, availed themselves next day of the privilege of visiting one of the logging camps of the Parker-Young Company, situated in the heart of the White Mountains. The trip was taken on flat cars and afforded a superb view of mountain scenery all aflame with the gorgeous autumnal foliage of maples and other hardwoods which showed vividly against the green of spruce trees and other conifers. As seen late in the afternoon the visitors were reminded of Francis Dempster Sherman's beautiful lines depicting a fall sunset in the Land of Evangeline:

"That night one looking at the West might say
That just beyond the heights the maples flared like scarlet banners,
The sun went down with such imperial splendor."

OHIO NEWS

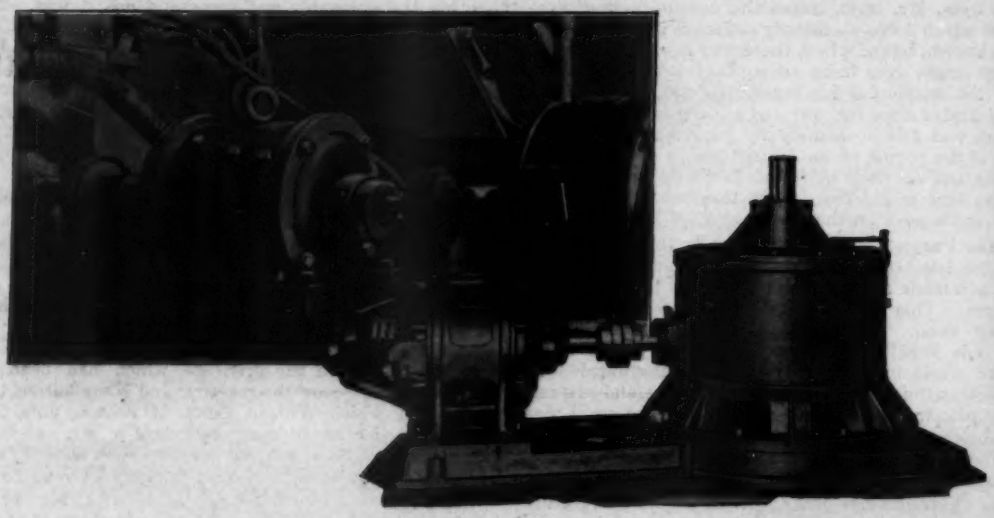
Miami Superintendents Hold Regular Meeting

The regular monthly meeting of the Miami Valley division American Pulp and Paper Mill Superintendents Association, was held at the Hotel Manchester, Middletown, Ohio, on the last Saturday of September. Supper was served at 6:30, after which forty-one members enjoyed a real smoker through the generosity of H. Waterbury & Sons Co., felt manufacturers, Oriskany, N. Y.

The speaker of the evening, Mr. C. B. Oliver, Chicago manager, United Filters Corporation, came well prepared to interestingly talk on the subject, "The Fundamentals of Filtration." Mr. Oliver was brought up an engineer and with his knowledge and experience, very capably covered his subject. He used a chalk talk and two reels of motion pictures which helped to clear up details which might not be understood from just the talk. In part his talk was as follows:

"Continuous filters applied to either savealls, deckering or washing of paper stocks differ from the practice of utilizing drum deckers or savealls very little. Deckers and savealls work largely on the principle of screening out the stock and the mesh of wire covering these units determines largely the effulent losses on any grade of stock. Normally, a decker or saveall operates at ten revolutions per minute and its capacity per square foot of surface is high. For this reason, its losses in the water passing through this square foot of surface is also high.

Continuous filters are operated at a speed of one revolution per minute and are operated on stocks thick enough to form a mat over the surface. This mat forms almost instantaneously



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and water passes through the mat. The mesh of the screen has very little to do with stock losses.

There are two types of savealls—the drum type, which works very much like a decker manufactured by several companies, utilizes the principle of filtering on the surface of the drum. This drum is divided into twelve to twenty-two sections individually controlled by a main valve. The drum is usually wood, although in some cases steel with wood partitions is used. The drum is covered over these divisions with wire supported by backing wire and around it is wound a binding wire one to one and a half inches apart in order to hold this wire in place.

The lower portion of the drum is submerged in the tank and as these sections become covered, the vacuum is turned on, pulling the water through the sections and forming the cake on the surface of the drum. The cake rotates into the out-of-tank position and is discharged by means of a scraper just before it enters the submerged position on the next cycle. The filtering area is determined by the type of drum and the length.

The other type of continuous filters utilizes the area of both sides of a disc. These discs are divided into about ten sectors, the individual sectors constitute an independent filtering unit and drains into a conduit in a large center shaft. The sectors are made of aluminum alloy covered with a backing wire and a special filtering wire or fourdrinier type wire. The number of discs placed on the shaft depend on area desired and each line of sectors is controlled by a cast iron plug in a bronze bushing. As the disc is submerged, the same filtering action takes place as described in the drum except on both sides of the disc. The disc rotates between two rubber edge docters which lift the cake off each side of the disc and drop it into a launder or stock tank. It is obvious that a very much larger area can be obtained in the same space, and the construction of the disc filter is heavier. All metal construction is used so that there is no chance of warping or leaking. The price of either filter per square foot of area is about the same. The drum filter largest unit in paper type of unit is three hundred fifty square foot area; the disc filter in less space gives one thousand square feet. It is possible to divide the filter into two or more units operated on the same shaft. The same vacuum is used on either type of filter."

Several members asked questions regarding the different types of machines and there was some discussion as to possibilities. The above outline covers practically the entire subject presented by Mr. Oliver, however, the diagrams shown by his chalk talk and the two reels of motion pictures placed a much better and more firm picture in one's mind. The talk together with the concluding discussion was very instructive and interesting.

This meeting also included the annual election of officers for the ensuing year. The officers elected are as follows:

Chairman, H. G. Funsett, Hagar Straw Board & Paper Co., Cedarville, Ohio; first vice-chairman, F. C. Cole, Fox Paper Co., Lockland, Ohio; second vice-chairman, Homer H. Latimer, Beckett Paper Co., Hamilton, Ohio; third vice-chairman, Jack Smith, Gardner and Harvey Paper Co., Middletown, Ohio; secretary and treasurer, G. S. Martindale, The Champion Coated Paper Co., Hamilton, Ohio.

Hotel Manchester was selected as the place for the next meeting to be held on the last Saturday of October. Arrangements have not yet been made for the speaker or entertainment. However, there are several prospects in mind, anyone of whom will put across something worth while at this next meeting. Jack Smith will arrange the entertainment which will provide for the regular get-together.

Following is a list of those present:

Homer C. Ferguson, G. S. Martindale, B. C. Hope, C. H. Mannion, R. C. Warder, Roy W. Maggart, R. A. Steffen, Chas. Soule, C. L. McKasson, Kenneth Jackson, The Champion Coated Paper Co.; J. Adam Ritz, Ohio Paper Co.; C. B. Oliver, United Filters, Corporation; Tom Harvey, A. R. Harvey, G. H. Harvey, Gardner and Harvey Paper Co.; Herbert L. Nichaus, Jas. Murphy, F. C. Cole, Richardson Paper Co.; Jos. McNabb, H. C. Lindsay, H. W. Server, John MacMurray, C. A. Miller, W. A. Clark, Miami Paper Co.; Jack Smith, Gardner and Harvey Paper Co.; L. T. Murphy, Franklin Board & Paper Co.; H. C. McGlaughlin, T. A. Jones, T. E. Jones, Henry McGlaughlin, The Harding Jones Paper Co.; Wilson W. Gallow, H. G. Funsett, Hagar Straw Board Co.; F. E. Moser, D. D. Thirkield, N. B. Oglesby Paper Co.; Cyrus E. Frye, Lincoln Paper Co.; C. C. Fager, Tarentum Paper Co.; Tom O'Flynn, Wardlow-Thomas Paper Co.; H. E. Weston, Thomas H. Savery, Jr., M. E.; R. W. Jenkins, Ohio State University; C. W. Wright, D. E. Scott, The Adams Bag Company.

Dayton Men in Big Canadian Project

A forward-looking group of Dayton business men are largely responsible for a stupendous industrial project now being undertaken and completed at Pine Falls, Manitoba, some 70 miles northeast of the city of Winnipeg, where the million and a half dollar newsprint mill of the Manitoba Pulp and Paper Co. is being erected.

The G. H. Mead organization of Dayton, which controls many pulp and paper mills throughout the woodpulp regions of the United States and Canada are behind the project which is referred to by the Canadians as the "eleven million dollar paper mill" and which will be completed and ready for operation by the first of the year. A thousand workmen are now busy completing the mill and the houses for the employees and officials who will be stationed there.

J. Durbin Nevius

J. Durbin Nevius, well known resident of Oakwood, died recently at the residence of his son, Arthur H. Nevius, Haver and Rubicon roads, where he had made his home for the past six years.

Besides the one son, Arthur H. Nevius, who is vice-president and general manager of the Miami Paper company, he is survived by one sister, Mrs. Laura Hall of Delaware, Ohio.

Burial was made at Mt. Airy, a suburb of Philadelphia.

The Howard Paper Company, of Urbana, is in the midst of a very extensive building program to take care of the increasing demand for its advertised mill brands of watermarked bond and ledger papers. A new 48 inch Seybold automatic cutting machine is being added to the finishing room equipment, and in the power plant a new 800 h. p. Babcock and Wilcox Stirling type boiler equipped with Westinghouse stokers is being installed. A large warehouse was completed a short time ago, which will make it possible to carry a large stock at the mill of all weights, sizes and colors.

Hiram Fowler, 33, of Hamilton, electrician at the Champion Coated Paper Company's plant, died of injuries incurred when he fell from a crane which he was repairing. Plant officials said that Fowler's body had come in contact with a live wire, throwing him to the floor below, where his skull was fractured. Fowler was married and the father of three children.

Crystal Tissue Co. Making Plant Improvements

The Crystal Tissue Company, of Middletown, is making satisfactory progress in its plant improvements. Some time ago the company completed the construction of a warehouse which greatly increases pulp storage space. Power changes are now being made, and several other projects are planned. The work is being carried on with the least possible delay in production.

One of the first improvements made was that of converting the beaters into high speed type, and that of increasing the speed of the paper machines. This was accomplished by the electrification of all machinery. The company owns what are termed the "old mill" and the "new mill." In the latter an important improvement was made in installing a Hamilton uniflow engine.

A new bleach plant of the most approved type is to be located midway between the new and the old mills, and there is now under construction a clear water storage system which will enable the company to keep 5,000 gallons of water in reserve.

The Civic Association of Middletown during the past week sent a Fact Finding Commission to a number of cities in Ohio and Pennsylvania to observe the operation of public bodies. One of the most interesting places to be visited was Marion, Ohio, where the late President Harding's former newspaper plant was inspected.

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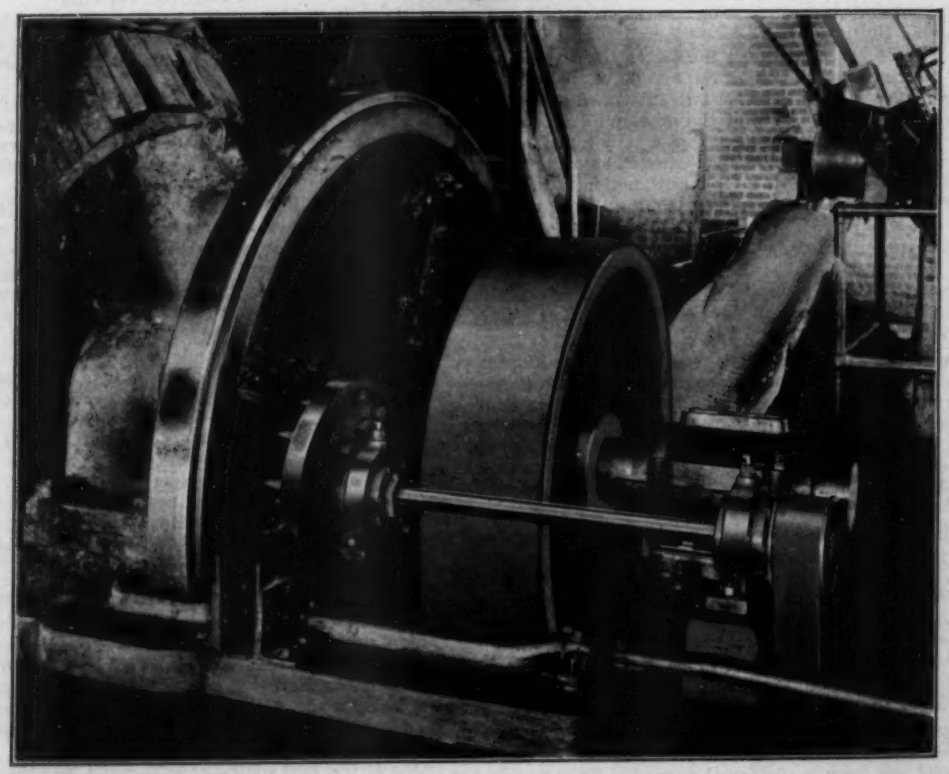

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Canadian Section

Optimism Prevails as to Newsprint Industry

Canada is the largest producer of newsprint in the world, a position which will be accentuated when the new mills come into operation. At the present time there are just over twenty new mills and additions to old plants in course of construction, nearly all being for the manufacture of newsprint. The question naturally arises as to whether the additional output will not involve over-production, with a tendency to lower the price of the commodity. For several years the constant additions to equipment have created doubts as to whether the production would be absorbed. All these misgivings have been falsified; the consumption has kept pace with the output and today the mills are working at practically full capacity.

The prospective addition to the production is very considerable, and if the demand does not increase in the same proportion, there will naturally be either too heavy stocks or the mills will have to reduce the output. Some of the older American mills have already gone out of business, because they could not compete with the modern Canadian mills, and a fall in price would undoubtedly mean that other American mills would cease to operate. In estimating the chances of over-production, it is well to take into account the fact that the American papers are looking forward to greatly increased circulations, and the printing machine manufacturers have booked large contracts for machinery. This involves further demands for paper, in which Canadian mills will share to a material extent.

It is evident that Canadian and American investors are of opinion that the outlook is satisfactory from the demand point of view. Those who are responsible for the new ventures and for the additions to the existing plants have clearly faith in the power of buyers to absorb the contemplated large additions in the production.

While the newsprint mills are making money, those who are engaged in the manufacture of pulp are, as a rule, hardly making ends meet. The competition of Scandinavian pulps is very keen and prices obtained by Canadian companies do not give an adequate return on the capital outlay.

The leaders of the industry are optimistic, and the fact that they are investing such large sums in constructing new laboratories in Montreal is evidence that they believe the supply of pulpwood is sufficient to support the industry for many years. The laboratories are primarily intended, by co-operative research, to solve many problems and to evolve methods which will result in lower costs of production.

Much interest in pulpwood development in Canada is being shown in financial circles in London since the great oversubscription of the Anglo-Canadian issue. Inquiries from important British capitalists are being constantly received by Canadian officials in London. A recent inquiry was from A. B. Travers Company, Limited, who stated that they had friends interested in acquiring a good Canadian pulpwood area. The interests represented were stated to have a large sum available to invest in a suitable proposition. The inquiry was forwarded to the Minister of Lands and Forest of the Province of Quebec.

Canadian Paperboard Companies Prospering

It is stated that the Canada Paperboard Co. experienced during July the biggest month in its history, while during August the business was well maintained. The affiliated company, the Tidewater Paper Mills, have also been feeling the improved business conditions that have affected the Canada Paperboard Co. The Tidewater company is the wholly-owned United States subsidiary of the Northern Paperboard Co., in which there is a considerable investment in Canada; and which owns more than 80 per cent of the outstanding stock of Canada Paperboard. Both subsidiary companies manufacture cardboard.

Contributing to the excellent showing of Canada Paperboard is the fact that the power developments of its subsidiary, the Quinte and Trent Valley Power Co., were completed last May, since when the company has been using power supplied from this source.

Employment Problems Discussed

The International Association of Public Employment Services held their fourteenth annual meeting in Montreal on September 16, and discussed, amongst other subjects, the employment problems of the lumber industry and of the pulp and paper industry.

Adam Wilkinson, of the American Writing Paper Co., Holyoke, Mass., showed the employment problems of this industry to be somewhat similar to those of the lumber industry. He said that the future of the business rested upon the development of skilled workers. He advocated an apprenticeship system, but he declared that unless the manufacturers co-operated in this matter it would be impossible to work it out, as it took about nine years to make a skilled paper craftsman. He attributed the large labor turnover among young men to the migratory influence of the automobile. They do not migrate to other types of paper mills, however, as their experience would not help them there, but they go to other mills making the same grade.

J. W. Collins, who was in charge of the New Zealand exhibit at the Canadian National Exhibition, Toronto, called upon a number of paper men and, as a result of these interviews, it is possible that coated paper producers may import casein from New Zealand, that used in Canada at the present time coming largely from Argentina. The matter will be the subject of further negotiations.

Permanency of Supply of Raw Material

According to Roland D. Craig, forest engineer of the Dominion Forestry Service, Canada has about 250,000,000,000 cubic feet of standing timber of all kinds. The present rate of depletion is approximately one-fiftieth of this, or 5,000,000,000 cubic feet per annum, of which about 2,500,000,000 cubic feet is cut up for fuel, ties, posts, pulp, lumber and shingles; 800,000,000 cubic feet is destroyed by fire (some years more and some years less), and the balance is destroyed by insects, fungi, wind and other forces of nature.

These figures seem to give assurance that Canada will for many years remain a forestry nation; but that is not sufficient, and Canada must remain a forestry nation permanently and be able to increase its cut. In this connection, Mr. Craig states that it is doubtful if the annual growth of timber is as great as the annual depletion, and he points out that, while the lumber industry is dwindling, the pulp and paper industry is increasing so rapidly that the annual rate of cut is growing by about 14,000,000 cubic feet per annum. He then goes on to say, "There is no reason why, with the soil and climatic conditions that Canada possesses, that the present production should not be maintained and augmented, providing the losses from fire are materially reduced and logging operations are conducted so as to utilize to the best advantge the present stand and leave the forests in a condition safe and favorable for reproduction."

Closer Contact Desired Between East and West

Edward Beck, secretary of the Canadian Pulp and Paper Association, recently returned to Montreal from an extended tour of Western Canada. The two chief objects of Mr. Beck's trip were stimulation of interest of western members of the

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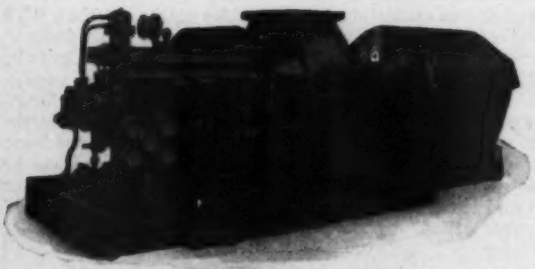

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association in the project of establishing a research institute at McGill University for the pulp and paper industry, and the establishment of a closer contact between the head offices of the association and its western members, which has been difficult on account of the vast distances separating these members from headquarters.

In both these particulars the trip was eminently successful. Mr. Beck got in personal touch with the leading men in the industry on the Pacific Coast, and found that a great deal of interest is being taken there in the different activities of the association, and that the indications are that the West will be very largely represented at the annual meeting of the association in January.

Mr. Beck stated that he found the spirit of the leaders of the industry everywhere one of optimism. All the mills that he visited are expanding, improving their plants and increasing their output.

Exchequer Court Hands Down Important Judgment

Mr. Justice MacLean, of the Exchequer Court of Canada, recently handed down a judgment of considerable interest and importance to the Canadian paper industry. The action was for infringement of the Pope patent for the use of compressed air in automatically threading the paper through the calender stack, and was taken by the Pope Appliance Co. against the Spanish River Pulp and Paper Mills. The plaintiff also brought action against the Abitibi Power and Paper Co. for infringement of the same patent, and that action was tried immediately following the conclusion of the first one, the evidence in the one case being evidence in the other by agreement.

After a comprehensive summing up of the essential features in the evidence and a detailed discussion of what does and what does not constitute an invention, Justice MacLean concludes his judgment by saying: "In view of the knowledge disclosed in the prior art, in view of the similarity of purpose and mode of application between Pope and others, including Pope himself, it seems to me that the patent in suit is but the adaptation to a new purpose of a known method or appliance which is analogous to the purpose to which it has already been applied and the mode of application is also analogous, and that no invention is displayed in the manner in which it is applied. It would not seem reasonable to me to exclude the whole world from doing to same thing, and that is what it would mean if Pope is a valid patent. Upon this ground, I think the plaintiff also fails. Altogether the plaintiff's action for infringement fails. The defendant will have its costs of action."

The second action was dismissed on the same grounds. Late advice is to the effect that the plaintiff has given notice of appeal to a higher court.

Greater Co-operation Between U. S. and Canadian Industries

A very pleasant luncheon was given in Montreal on the 16th of September by the executive committee of the Canadian Pulp and Paper Association, at which Mr. Normal W. Wilson, the president, and Dr. H. P. Baker, executive secretary, respectively, of the American Paper and Pulp Association, were guests of honor.

Mr. L. R. Wilson, president of the Canadian Pulp and Paper Association, remarked on the advantages of closer relations with the American paper makers, although the feelings of Canadians in the industry could hardly be more friendly than they are. There are many points at which co-operation between the two great branches of the industry is possible, and he called on Mr. Norman Wilson to speak on the subject. The latter was followed by Dr. H. P. Baker.

The general tenor of the statements of both speakers was that the secret of peaceful relations between neighbors, whether they be individuals, associations, or political entities, is to forget, or at any rate to submerge, points of difference and to get together on subjects of common interest. There are plenty of points of contact on which the two great associations could find opportunities for co-operation, such as prevention of stream pollution, standardization and simplification of grades and sizes of papers, meeting unfair competition from countries with depreciated currency or with lower standard of living, forestry management, protection, regeneration, etc., exchange of statistics, and, last but not least, education.

Mr. Norman Wilson suggested that a beginning could be made by the appointment of a committee by each association to examine the situation and look for subjects of common interest, and any subject suggested that did not meet with the unanimous approval of these committees in joint session would be immediately put aside.

QUEBEC

Good Showing by St. Lawrence Paper

The annual financial report of the St. Lawrence Paper Mills, Ltd., for the year ended June 30, 1926, is a satisfactory exhibit, revealing the company in a fine liquid position and reflecting a good earning power. The balance sheet shows a considerable change as a result of the company's recent financing to look after an extensive expansion program, but the earnings shown in the current report are from the operation of a 150-ton newsprint mill, together with the output of a 100-ton sulphite mill brought into production during the period under review, and do not reflect any benefit from the new financing, which provided sufficient funds to bring the newsprint mill to a capacity of 325 tons per day.

Profits after deduction of taxes are shown at $969,695, which compares with $868,469 before the deduction of taxes in the preceding twelve months. Payment of bond interest at $192,774 and debenture interest at $8,408, left net income for the year at $435,893, as compared with $389,270 in the preceding period. Preferred dividends amounted to $200,000, leaving a surplus for the year at $235,893, bringing the profit and loss balance to $587,460. Working capital position was improved, being raised from $1,403,360 to $1,513,940.

Dubuc Not to Acquire Chandler Mill

As announced last month, negotiations were carried on between J. E. A. Dubuc and the Bondholders' Protective Committee of the St. Lawrence Pulp and Lumber Corporation for the purchase of the first mortgage serial sinking fund 6 per cent gold bonds at 50 cents on the dollar. At the time a deposit of $50,000 had been made by Mr. Dubuc and his associates as an evidence of good faith, and according to the terms of the agreement a sum of $732,500 would be paid for the bonds and in addition a further amount of $41,750 as part payment of the expenses of the committee.

So far no steps of a definite character have been taken to complete the terms of the agreement and there seems to be little likelihood now of Mr. Dubuc taking up his option. One of the big difficulties in the situation, so far as financing is concerned, is that it has been estimated that cash requirements of almost $2,000,000 would be required in carrying out the undertaking to a point where success in operating the mill would be reasonably assured.

Forest Protection Campaign Brings Results

The general report of the forest protection service of the province for the year 1925 has just been made public and showed that never before had there been such small losses from forest fires. The total number of fires was 607, of which 143 occurred in September, but none of them were of importance. The report shows that in 1925 there were only thirty-one and a half square miles of forests ravaged by fires, or only one-tenth of the area affected in 1924 and 0.63 per cent of the total destroyed in the year 1923.

A by no means negligible factor in this excellent showing is the persistent educational campaign waged in favor of the preservation of our forest resources, and also the splendid co-operation of the several Forest Protective Associations of the province under the direction of the Provincial Forest Protection Service, ably directed by Henri Kieffer. Indications are that the losses will again be reduced this year, and Mr.

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Backus-Brooks Co. (Mch. No. 1)
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Canada Paper Co., Ltd.
Canadian Internat'l Paper Co. (5 Machines at Three Rivers)
Donnaconna Paper Co., Ltd.
Dryden Paper Co., Ltd.
E. B. Eddy Co., Ltd.
Laurentide Co., Ltd.
Newfoundland P. & P. Co., Ltd.
Port Alfred P. & P. Corp. (Mchs. Nos. 1 and 2)
Price Bros. & Co., Ltd.—Kenogami
Price Bros. & Co., Ltd.—River Bend
Powell River Co., Ltd. (Mch. No. 1)
Riordon Pulp Corp.
Spruce Falls Co., Ltd.
St. Maurice Valley Corp. (Three Rivers)
Wayagamack P. & P. Co., Ltd. (Kraft Mill)

Installations Now Being Made

Backus-Brook Co. (Mch. No. 2)
Brompton P. & P. Co., Ltd.
Canadian Internat'l Paper Co. (4 Machines at Gatineau)
Fort Frances P. & P. Co., Ltd.
Manitoba Paper Co., Ltd.
Mattagami P. & P. Co., Ltd.
Port Alfred P. & P. Corp. (Mchs. Nos. 3 and 4)
Powell River Co., Ltd. (Mch. No. 2)
Provincial Paper Co., Ltd.
St. Anne P. & P. Co.
St. Lawrence Paper Mills, Ltd. (New Mill)
St. Maurice Valley Corp. (Belgo Div.)
Thunder Bay Paper Co., Ltd.
Wayagamack P. & P. Co., Ltd. (News Mill)

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See Page 388 in the 1926 Paper and Pulp Mill Catalogue

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Kieffer expects that the area affected will hardly reach 15,000 acres, as compared with some 20,000 acres last year.

Work Under Way at Anticosti

Considerable activity is being displayed in the Island of Anticosti, recently purchased from Senator Mènier, of France, by the Anticosti Corporation, which is owned jointly by the St. Maurice Valley Corporation, the Port Alfred Pulp and Paper Corporation and the Wayagamack Pulp and Paper Company. Extensive preparations are being made with a view to taking out large quantities of pulpwood this winter, and it is expected that the cut will be of several million feet. One of the chief contractors will be Alexandre Gagnon et Fils, of Chicoutimi-Centre, who will have over 2,000 men and 400 horses at Anticosti for several months.

As a result of these developments, and in order to maintain closer relations between Quebec and the Island, the Anticosti Shipping Company, with headquarters in Montreal and authorized capital of $50,000, has been incorporated to carry on the transportation business by land or by water, of passengers, freight, mail and goods, etc.

The School of Paper Making at Three Rivers opened its fall session on September 15. V. Baillairge, who was acting principal last year, has been appointed principal, and J. A. Vertefeuille has been appointed secretary. H. E. Lauriault, who was member of the staff as instructor in the manufacture of pulp for the last two years, has resigned his position to continue permanently in the technical position which he occupied this summer in the employ of the Quebec Pulp and Paper Company at Chicoutimi.

The Canada Paper Company, which recently completed reconstruction of its soda pulp mill at Windsor Mills, has awarded a contract to the Newton Construction Company, of Sherbrooke, for extensions to the finishing room, a new machine room, beater room and shipping room.

The financial record of the province of Quebec during the fiscal year ended June 30, 1926, shows that the natural resources of the province, as comprised in forests and water powers, brought in $6,061,854, which is the greatest revenue ever brought in from this source.

The Société Aérienne Franco-Canadienne, which has contracted with the Provincial Government to draw up a map of a portion of the Gaspé Peninsula, has made excellent progress with the work. Already some 3,500 aerial photographs have been taken and sent to the company's mapping department in Paris. It is expected that if the work undertaken this year should prove satisfactory to both parties a much larger contract will be passed next year, and in that event the company would move its mapping department from Paris to Montreal.

At a recent meeting of directors of the Brompton Pulp and Paper Co., Ltd., R. W. Steel, of the Dominion Securities Corporation, was elected a director of the company.

Sir James Irvine Addresses Montreal Chemists

The Montreal Section of the Society of Chemical Industry had the privilege of hearing Sir James Irvine on the constitution of cellulose. Sir James came to America in July to receive the Willard Gibbs gold medal, which the American Chemical Society awarded him in recognition of his outstanding work on the chemistry of the sugars, particularly of starch and of cellulose, and while on this side he made a lecture tour of the United States. The Section was particularly fortunate that Sir James should have been persuaded to come here on the eve of his departure, after a strenuous two months in the United States, and showed great appreciation by turning out in large numbers. Several pulp and paper chemists from outside points were present, including Dr. J. S. Bates, of Bathurst, N. B.; R. W. Hovey, of Iroquois Falls, Ont.; Prof. Emil Heuser, who has recently come over from Germany to direct the newly-organized research laboratories of the Riordon Pulp Corporation at Hawkesbury, Ont., and S. Wang, chief chemist of the Riordon Pulp Corporation.

For one hour the speaker kept his hearers spellbound, leading them through the intricacies of the problems involved in determining the constitution of the sugars with such skill and mastery that the whole subject almost appeared to be simplicity itself. Yet, speaking with the authority of one who has been devoting his best energy to the subject for the last thirty years and whose work has been eminently successful, he warned against being too sure and definite of one's findings in this line of research, which was full of unsuspected pitfalls.

Sir James congratulated the Canadian pulp and paper industry on its initiative in collaborating with McGill University to organize and carry out fundamental chemical research on cellulose, under the direction of Prof. Harold Hibbert. Cellulose is bound to come into its own as the raw material for the production of numerous commodities, and no one at the present time can even dream of what the cellulose industry will have become a few decades hence; and it is quite fitting that Canada, with her vast cellulose resources and rapidly expanding pulp and paper industry, should take the lead in the field of cellulose research.

Quebec to Enforce Lord's Day Act

That sufficient time has been given to the interests to comply with the provisions of the Lord's Day Observance Act, and that should they neglect to do so the law will be enforced to the limit, is evidenced from a letter recently sent by Premier Taschereau, Attorney-General of the Province, to the large pulp and paper mills concerned.

The letter states that, after holding an investigation, it has been clearly shown that hardly any work on Sunday can be claimed to be necessary or urgent. Consequently, it is added by the letter, the time has come to comply with the law without further delay, particularly as some mills have completely stopped Sunday work with no serious results.

Chahoon Denies Merger Rumors

Definite denial of rumors regarding the merger of Laurentide Company with any other newsprint companies was made by George Chahoon, Jr., president, at the annual meeting held recently in Montreal. In presenting the annual statement, Mr. Chahoon, in dealing with this matter, said: "There have been rumors around the Street about Laurentide merging with other companies, or the possibility of the company selling out to somebody else. It seems to me only fair to state to shareholders, that there have been no negotiations of any sort. No one has approached us either to amalgamate or sell out."

Commenting on the operations of the company during the past year, Mr. Chahoon stated that it had been possible to operate the mills at full capacity, and although in the latter half of the year there was a reduction in the selling price of paper, profits were well maintained. The company had experienced a successful year, as it had escaped any damage from forest fires, and woods operations were carried on in a highly satisfactory manner. He did not want to prophesy anything for next year, but there was sufficient business ahead to run the mill at full capacity for the remainder of the year, and he had no doubt the company would receive a fair share of business on the renewal of contracts in November.

It is rumored that the E. B. Eddy Company, of Hull, has sold out to Canadian International Paper for $6,000,000, but it has not been found possible to obtain either confirmation or denial.

Additions to Ayers Plant Practically Completed

The finishing touches are now in progress on the large extensions built this summer by Ayers, Ltd., of Lachute, to the cotton duck weaving plant, and on completion eight new cotton dryer-felt looms will be installed, with additional twisting equipment. This plant represents the complete equipment developed by Ayers, Ltd., for the manufacture of wool and cotton felts for pulp and paper making machinery. The woolen manufacturing plant, at present ten sets of 60-inch cords, is complete in every detail. Two additional sets of 60-inch cords are on order and will be installed shortly, together with mules

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There is nothing complicated about the Camachine Score Cut Principle of slitting. Explained in the simplest possible terms, it is the slitting action brought about when a slitter wheel, mounted in a holder, is spring-pressed against a revolving flint-hard cylinder.

With such a cutting system it is evident that there should be less working parts to get out of adjustment, less cumbersome manipulation in spacing for roll widths, than in the more involved methods used on other slitting and roll winding machines. Such is the case.

The Cameron Machine Company in building the Score Cut Principle into each and every CAMACHINE is definitely sure of the service it will render, and any machine it recommends for a specific purpose will be installed anywhere in the United States on a 30 day trial subject to the customers right to retain or reject the machine.

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and several more heavy woolen felt looms and blanket looms.

It is the intention of the company later to install complete cotton carding and spinning equipment for making the cotton yarn used in the dryer felts.

A new development in connection with the St. Lawrence Paper Mills is the formation of a subsidiary company to be known as the St. Lawrence Sales Co., which will take charge of the entire output of the company's mill at Three Rivers. The headquarters will be in Montreal, with H. W. Cressy and T. E. Pope in charge. The former was recently associated with the St. Maurice Sales Co. and the latter with the sales end of the Belgo-Canadian Co. Both will be vice-presidents of the St. Lawrence Sales Co. By the end of the year the capacity of the St. Lawrence Paper Mills will be 325 tons of news a day.

Two years ago the Hydro-Electric Power Commission of Ontario made a survey of the power possibilities at Des Joachims, Que., which is about fifty miles west of Pembroke, Ont., on the Ottawa river. The report of the engineers stated that at least 200,000 horsepower could be developed there and could easily be directed to Toronto. It is reported that the International Paper Co. have bought options for one year on ten miles on the Quebec side and eight miles on the Ontario side of the river.

Announcement has been made that Raymond Kelly, formerly general sales manager of the Kimberley Clarke Co., of Neenah, Wis., has been appointed a director and vice-president of the St. Maurice Valley's Sales, Ltd., and will have headquarters at the general offices of the company in the Canada Cement Building, Montreal. Mr. Kelly has had a wide experience in connection with paper sales and enjoys a large acquaintance among publishing firms in both Canada and the United States. For a number of years he was in charge of the Kimberley Clarke Company's sales in New York.

ONTARIO

Strong Showing by Spanish River

Another prominent newsprint company report has lived up to its advance notices, which, as such things go in the market, may be looked upon as remarkable. Not only does the annual financial statement of Spanish River Pulp and Paper Mills for the twelve months ended June 30, 1926, fulfill expectations, but it is safe to say that the balance sheet presents a stronger position than had been generally expected. The outstanding achievements may be briefly summarized as follows:

Earnings maintained to within $100,000 of the 1924-25 level, despite a reduction of $5 per ton in the last six months, which would mean about $500,000 on the output of the company, thus showing the ability of the administration to meet the contingencies of the times; reserves increased by $1,317,669; funded debt reduced by $433,534 and the establishment of a sinking fund reserve amounting to $148,754; investments in other promising newsprint companies increased by $325,000 through the purchase of a substantial amount of the capital stock of the Manitoba Paper Co.; cash on hand and in banks increased by $826,013 and by the purchase of Victory Bonds to the amount of $995,515; improvement of over $400,000 in net working capital, which now stands close to the ten-million mark.

At the annual meeting, which was purely routine in character, and at which the board of directors was re-elected, President George H. Mead, discussing the newsprint situation, said that, while there seemed to be potential overproduction in sight for next year, he did not think it would be great enough to make any real difference in the newsprint situation. Spanish River's over-production at the beginning of the present year had been fully absorbed in the second quarter. Mr. Mead stated definitely that no negotiations had been entered into or consideration given to any merger involving the company during the past year.

Good progress is being made on the plant of the Hinde and Dauch Paper Co., located at Trenton, which will have a capacity of fifty tons of strawboard daily. The mill is expected to start producing towards the beginning of the year. The company is now taking in baled wheat and rye straws in carload lots, team and track deliveries. Threshers are being advised to keep their wheat and rye straw separate from other straws.

The Superior Paper Mills, of Thorold, which have taken over the premises of the old Peerless mill and are converting it for the production of lightweight specialty papers, including pattern tissue and twisting tissue, have made a direct offering to the public of $100,000 of their capital stock at par. The company is said to have orders already on their books for pattern tissues and twisting tissues that will keep them busy for a long period, these lines not being manufactured in Canada at the present time.

It is reported that Kinleith Paper Mills, St. Catharine's, which have been idle during the past two years, may resume operations at an early date. Negotiations are going on and certain concessions are being asked from the city in the way of exemption from taxation for a term of years.

Jackson G. Merriam has accepted the position of chemist for the Ontario Paper Company, at their Thorold mill.

Hearing Opened in Mattagami Action

Hearing of an action arising out of the liquidation and proposed sale of the properties of the Mattagami Pulp and Paper Co., which may have an important bearing on the prospects of security holders of the company in the event of sale or reorganization, was recently opened before the Master-in-Chambers, at Toronto. It is an action undertaken by the trustee-in-bankruptcy and the junior security holders of the company as plaintiffs to obtain a ruling, among other items, on the validity of the second mortgage debenture issue of the company, outstanding to the amount of $3,935,000. The Montreal Trust Company, trustee for the debenture holders, and the Royal Securities Corporation, which firm was instrumental in marketing the issue in 1919 and again in 1921, were represented at the hearing, which was largely devoted to the submission of exhibits and points of evidence for later argument.

A special general meeting of the 7 per cent mortgage debenture stockholders of the company has been called at Montreal for the 7th instant. The purpose of the meeting is to authorize the trustee for the debenture-holders to purchase the property at a price not to exceed the total par value of the first mortgage bonds outstanding, total par value of the outstanding debentures, interest and all other charges ranking prior to the debentures.

It has been decided to rebuild on a much larger scale the plant of the International Fibreboard Co., at Midland, which was recently destroyed by fire. The plant was very busy at the time the fire occurred and had orders sufficient to keep it going for several months on Ten Test Insulating Board.

I. H. Weldon, president of Provincial Paper Mills, gave a dinner at the Summit Golf and Country Club, Toronto, in honor of R. A. McInnis, until recently manager of the Abitibi Power and Paper Company's mill at Iroquois Falls, and now connected with the Anglo-Canadian Pulp and Paper Co. Mr. Weldon gathered a few of the men who had been intimately associated with Mr. McInnis' work in Ontario, and who knew him socially, for the purpose of expressing to him their appreciation of his work in the interests of Northern Ontario and his efforts toward accident prevention and compensation throughout the province generally.

The Daverin Paper Mills, Ltd., at Camden East, which had been idle for some time, resumed operations last month. A thorough reorganization has taken place, important changes in the personnel of the company have been effected, and under the new conditions, both physical and financial, a successful future is assured. Production will be confined to bonds,

The Diary of a Nation

MANKIND, with ignorance of the darkened future, has always been careful to keep contact with its past. When the luxurious tombs of the Pharaohs were being hewn from the solid rocks of the Nile Valley, there developed in Central America a civilization with a high culture that went down under the heavy tread of the Spanish conquistadors. This people, on its feast years, erected stone memorials, cut with tools of stone, to keep a record of its social progress. Within recent years many of these tablets have been unearthed and their messages deciphered.

Only the Mayan rulers and priests could keep such a diary, and there was only one copy for the use of all. In this present day and age, millions of people keep a running story of their past—and there are millions of diary books for them to use. The one diary cut laboriously in stone has given way to millions made possible by generous quantities of paper.

Hammermill Paper Company

ERIE, PENNSYLVANIA

ledgers, envelope, offset, writings and high-grade specialties, and the mill is well-equipped to make these grades. Radical changes in the piping system and water supply have been effected, thus insuring a uniform clean product.

A meeting of safety experts, under the auspices of the Ontario Pulp and Paper Makers' Safety Association, was held recently at the King Edward Hotel, Toronto, at which a survey of the work already accomplished this year was made, ideas and suggestions exchanged, and plans for the extension of the work outlined.

The Backus Brooks Company have recently placed a repeat order for two Ljungstrom air preheaters; one for Kenora to operate on one 800-horsepower boiler, and one for Fort Frances to operate on two 532-horsepower boilers.

According to Mr. Gardner, woods superintendent of the Provincial Paper Mills, at Port Arthur, he has effected a saving of 35 cents a cord over the use of horses in the hauling of big pulpwood loads. He states that with the tractor he can cut his logging costs and speed up his work. The company are hauling loads of pulpwood averaging four cords and weighing ten tons by the use of the tractor.

The Spanish River Pulp and Paper Mills, Ltd., is undertaking a large program of extension at its Sault Ste. Marie mill, including the rebuilding of the boiler house, installation of two steam turbine generators to be housed in a new building, the installation of two lines of electric grinders, and the building of a new fresh water intake; and it is expected that the whole undertaking will be completed by the spring of 1927. The estimated expenditure on the whole job is in the neighborhood of $700,000.

McInnis to Complete Term as Safety President

At a meeting of the Board of Directors of the Ontario Pulp and Paper Makers' Safety Association last month, President R. A. McInnis tendered his resignation, in view of the fact that he has accepted a position outside of the province. After the members present had listened to the reading of the letter and to an elaboration of it by Mr. McInnis, a motion was immediately tabled that Mr. McInnis hold office as president of the association until the end of the present term, notwithstanding the fact that he would be residing outside of Ontario.

It was also agreed that George Carruthers, head of the Interlake Tissue Mills, and vice-president of the Safety Association, would, as far as possible, relieve Mr. McInnis of the president's duties. The motion to this effect was moved by I. H. Weldon, seconded by Mr. Carruthers, and carried unanimously. In view of the attitude of his fellow directors and the appreciation of his services, as voiced by them, Mr. McInnis agreed to continue in his position as president until the next annual meeting of the associaton, to be held some time next March.

Gordon C. Edwards, who was elected in the recent campaign in Ottawa as Liberal candidate, is a nephew of the late Hon. W. C. Edwards, who was in his life-time an intimate friend of Sir Wilfrid Laurier. Mr. Edwards is president of W. C. Edwards and Co., Ltd., Edwards Lumber and Pulp, Ltd., and a director of other organizations, including the Bathurst Co., of Bathurst, N. B., and the Robinson-Edwards Lumber Co., of Burlington, Vt.

The Mellor Timber Co., Ltd., was recently incorporated to carry on the business of timber merchants, sawmill, shingle mill and pulp mill owners, etc. The head office is in Port Arthur, and the authorized capital stock $40,000.

MANITOBA

Board Mill for Winnipeg

Plans are progressing for the establishment of a mill in St. Boniface, a suburb of Winnipeg, to manufacture coarser paper products from waste paper that is now being shipped out of the province or is being destroyed. It is stated that there is a profitable field for its manufacture. Detroit interests are behind the enterprise, and there is every likelihood that the plant will be in operation this fall.

It is pointed out that approximately 100 tons of waste paper are shipped weekly from Winnipeg to the Twin Cities, and large additional quantities are available for manufacturing purposes. The St. Boniface mill will, therefore, experience little difficulty in securing its raw material in Winnipeg and in the larger towns of Manitoba and eastern Saskatchewan. Wood pulp, if required, can also be procured from mills in western Ontario, and, later on, from the mill now nearing completion at Pine Falls.

Another Large Manitoba Mill

It is rumored that there will shortly be a definite announcement granting the establishment of a second big pulp and paper mill in northern Manitoba, involving an outlay of about $15,000,000. The pulp mill and general development is backed by eastern capital, and a start will be made with it once difficulties in connection with transportation have been removed.

To facilitate their removal, the industrial development board has sent engineers and sureyors into the territory that has been selected as the sphere of operations of the company. These experts are now on the scene and will report on their work in due course. Both the Canadian Pacific and Canadian National Railways have been approached by the interests behind the proposition with a view to providing transportation facilities, but neither, it is understood, has taken definite action pending receipt of the reports of the board's engineers and surveyors.

BRITISH COLUMBIA

After five years of preparation, F. P. Jones, president of the Canada Cement Co.; Angus MacLean, president of the Bathurst Company, and H. G. Gundy of the Toronto financial firm of Wood, Gundy & Co., have announced they are prepared to go ahead with the installation of a large pulp and paper mill at Prince George. Five years ago, at the inception of the plan, it was termed a "ten million dollar enterprise," but Mr. Gundy admitted the possibility that the reorganized programme may call for the raising of $30,000,000. Already large timber holdings in the territory adjacent to Prince George are in the hands of the organization, but these are not sufficient to meet the requirements of the plant on the scale projected, and it is proposed to procure from the Government of British Columbia a "supply of timber sufficient in supply the mill in perpetuity."

The Canadian Rayon Pulp Company has broken ground for the construction of its proposed chemical pulp mill on Poplar Island. The plant will consist of a number of units, including main pulp mill, sawmill, power house, machine shop and miscellaneous buildings. The pulp mill will be equipped for an initial output of about 100 tons of bleached pulp per day.

Steve Chambers, for many years paper mill foreman at the West Linn, Ore., mill of the Crown Willamette Paper Co., and later holding a like position at the Corner Brook, Nfd., mill, where he helped start up the four 234-inch Walmsley machines, recently arrived at Powell River, where he will have charge of the six paper machines in that plant as paper mill superintendent.

NEW BRUNSWICK

C. L. Dougherty, an attorney of Fredericton, N. B., representing, it is believed, the Fraser interests, was the successful bidder at Fredericton on a number of timber berths in Crown lands. The firm of which Mr. Dougherty is a member is counsel for the Fraser Companies.

A new idea,

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The

Grewin Airblast System,

(Patents Pending)

an inexpensive but highly efficient method for removing the vapors forming between the dryers. It brings about a CONSIDERABLE SAVING IN STEAM AND FELT CONSUMPTION, permits a NOTEWORTHY INCREASE IN SPEED OF THE MACHINE, gives to the sheet UNIFORM DRYNESS OVER ITS ENTIRE WIDTH and through these qualities PAYS FOR ITSELF WITHIN A VERY SHORT TIME.

One of the largest Canadian mills, after having had the system in operation on one of their machines for a comparatively short time, was so favorably impressed that it has just placed the order on the equipment for 2 MORE MACHINES.

For Particulars apply to

American Voith Contact Company, Inc.

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Archibald Fraser, president of the Fraser Companies, who recently returned from a vacation spent in Europe, has denied his company made a purchase of timberlands owned by the D. and J. Ritchie interests of Newcastle, N. B. He also denied the Fraser interests had purchased timberlands owned by David Champoux of Campbellton, N. B. Mr. Fraser stated no definite site had yet been selected for the pulp and paper mill to be erected by the Fraser Companies in northern New Brunswick. All of the lands reported as having been acquired by the Fraser interests are located in Northumberland, Gloucester and Restigouche counties, on the north shore of New Brunswick.

NOVA SCOTIA

Among recent visitors at the Sheet Harbor plant of the A. P. W. Pulp and Power Company was a party consisting of A. W. Broughton, manager of the Caledonia Pulp Company, and five executives of the Scott Paper Company, of Chester, Pa., the parent company of the Caledonia Pulp Company. The members of the party were guided through the plant, and devoted considerable time to the inspection of the equipment. The visit led to the impression that the Scott Paper Company had decided to build a much larger plant at Caledonia than the destroyed mill. No announcement has yet been made as to future plans, but the parent organization has been studying the question for several weeks.

The steamer Kilmarnock recently arrived at Sheet Harbor from Montreal with 3,000 bags of cement for the A. P. W. Pulp and Power Co., Ltd., and 6,000 bags for the Nova Scotia Power Commission.

ALBERTA

Straw Paper Industry to Be Established

John Bache-Wiig and a group of Edmonton business men have completed preliminary arrangements for the formation of a company to be known as the Western Canada Pulp and Paper Co., for the express purpose of manufacturing paper from straw by a special process invented by Mr. Bache-Wiig. R. L. Grey, H. F. McKee, James Ramsay and D. M. Morgan, all of Edmonton, are interested. A Dominion charter has been applied for and the capitalization will be placed at $500,000.

Some time ago the Alberta Government conducted investigations into all well-known processes for the manufacture of pulp from straw in order to determine some method of utilizing the vast quantities of this material which annually goes to waste, and finally, about two years ago, made arrangements for laboratory tests of the Bache-Wiig process. The tests were regarded as successful and it was decided to go much more fully into the matter, and to this end a semi-commercial pulping plant was installed so that pulp could be made on a larger scale and definitely determine the actual cost of making both straw pulp and paper and to compare the costs with that of making the same from wood.

House Organ for Welding Operators

The Lincoln Electric Co., Cleveland, Ohio, has recently started a house organ for operators of welding machines. The booklet is to deal with the problems of operators met with in going about their everyday work.

One section of the book is to be a "How I Did It" section, composed of testimonials received from various operators as to how they performed some particularly hard piece of welding. Another section will be the "How Can I Do It" section, consisting of questions asked by operators regarding some bit of work or process. Still a third section will be devoted to "Suggestions," consisting of just what the name implies, suggestions of all kinds from interested operators.

Mr. A. F. Davis, vice president of the company, is to handle the organ.

BRITISH CORRESPONDENCE

Present Trade Conditions

At the present time there seems to be no clear indication as to how soon coal supplies and prices will become anything like normal. The burdens which British paper makers have had to carry since May, the month which saw the commencement of the strike, have been tremendous. In addition to the dislocation of business caused by the general strike, there has been the cost and trouble of using inferior foreign coal, and the difficulties of transport of both raw materials and finished paper had added considerably to the costs of production, that very few firms can hope to show a profit for the period covering the last six months—May to September. Rather than increase charges, many mills have borne the greater part of the expense themselves. Improvements in the quality of the imported foreign coal are reported, but a fifty per cent increase is charged in comparison with the previous grades of imported coal which was only 50 per cent efficient, and consequently dearer in the long run.

In spite of these troubles the figures shown in the latest official statistics for the British paper industry seem to point to progress in all directions. Imports of paper-making materials showed an increase of £72,398, while manufactured paper and cardboard imported decreased by £202,831. Exports of the latter increased by £96,885. The total export figure for the first eight months of this year shows an increase of £1,023,471 over the same period for the year 1925.

A paper trade contributor to The Newspaper World, London, has pointed out that prior to 1923 whole series of attractive cover papers were put upon our market by American mills, and samples were printed in a variety of styles and colors. He points out that during the past six or seven years many really beautiful cover and pamphlet papers have been produced by British mills, but that unlike their American competitors, the British mills do not have samples printed in first rate style. He suggested that a much more extended use could be made of quite a wide range of paper if printers had something before them showing how they could produce something far more attractive than they are accustomed to turning out.

It is reported in a trade journal that the contract for the full paper-making plant, including a 126-in. machine for the Australian Pulp and Paper Co. has been secured by the British firm of Messrs. Bentley and Jackson, Ltd., in spite of severe competition from continental firms, many of whose prices were considerably lower.

The lax methods of British paper manufacturers in regard to the branding of their products is again receiving attention, owing to the fact that the makers of the better grades of pure super-calendered and m. f. printings are grumbling rather freely at what they regard as unfair competition of the makers of inferior qualities. It appears that wholesalers often show a preference for inferior grades, and that the printers have no guarantee of what they will actually get. It is suggested now that all trade names whether on ream labels or on the paper itself should be the property of the manufacturers rather than of the wholesalers, and that the manufacturers should advertise to this effect.

Recently published figures of imports of wrapping paper into Australia rather point to the fact that Great Britain is losing ground in that market. Of 7,500 tons of kraft paper imported, Canada sent 3,700 tons, Sweden 2,380, Norway 1,217, and Great Britain only 20 tons. Of 1,360 tons of glazing and m. g. sulphite, Sweden sent 1,120, and Great Britain only 36. Some of the wrapping paper mills in this country are giving up thoughts of competing successfully with Canadian and Scandinavian mills in the Australian market.

At the ordinary general meeting of the Amalgamated Press (1922), Ltd., held recently in London, and presided over by Sir George A. Sutton Bt., the chairman of the company, it was pointed out that that company was the only periodical business in the country that is self-contained in that it controls its own timber limits in Canada, its own paper mills, and has also its share interests in the largest printing inks works in the country.

Murray Iron Works Company

(INCORPORATED 1870)

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Successful Builders for 56 Years

of BOILERS *and* ENGINES

PLEASE SEND US YOUR INQUIRIES

Engines	*Boilers*
CORLISS	INTERNAL-FURNACE
PUMPING	TUBULAR
UNA-FLOW	WATER-TUBE

Our Engine and Boiler Shops are quite independent of each other. ¶ And we Specialize on Boilers the same as we Specialize on Engines

SPECIFY

Powell Valves

For Long Uninterrupted Service

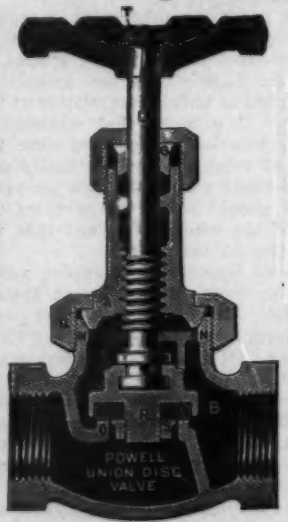

Fig. 150

Powell Composite Disc Valves

are furnished with bronze body and trimmings or iron body with bronze trimmings.

Bronze valves with union outlets are obtainable for both hot water and steam heating installations.

Discs are interchangeable with all standard vulcanized discs. However, we recommend Powell.

Descriptive circular on request.

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Dependable Engineering Appliances

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POWER PLANT PIPING

We are fully equipped to supply fabricated materials and to install complete piping systems for Electric Power Stations, Blast Furnaces, Steel Mills, Coke Works, Paper Mills and Industrial Plants of every description—backed by an experience of almost a quarter century.

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Stackers — Tiering Machines —Portable or Stationary

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Western Board and Michigan Supers' Joint Meeting

OWING to the immense amount of rain to which this section of the country has been subjected of late, the crowd which gathered to attend the meeting of the Western Board and Michigan divisions, at Battle Creek, Michigan, on Friday, September 24, was quite small. However, the making of numbers was more than made up by the inducement of the group which did prevail the elements and went to meet their fellow members of the American Pulp and Paper Mill Superintendents Association.

The crowd kept coming, one and two at a time, until 11:30 A. M., when Secretary William H. Sievert of the Board division opened the registration at the Post Tavern Hotel.

Address on the Terry Steam Turbine

The business of the meeting began at 1 o'clock with an address by Mr. Muller, chief engineer of the Terry Steam Turbine Company of Hartford, Conn., on the subject of "The Terry Steam Turbine and Its Use for Paper Machine Drives." Mr. Muller's talk was illustrated by the use of stereopticon slides.

Mr. Muller gave a brief historical review of the development of the steam turbine and a more detailed description of the Terry machine. The turbine is the oldest prime mover of record. Hero, the Elder, who lived in Alexandria, Egypt, about 200 B.C., described in his "Spiritalia" an apparatus consisting of a hollow globe supported by two pins and having two opposing bent exhaust pipes. The globe served as a boiler from which the steam escaped through the two pipes revolving the boiler by the reaction of the escaping steam. The same principle is used to this day in the well-known lawn sprinklers. Almost 2,000 years later in 1597, a similar contrivance was exhibited at Leipzig, Germany, and it was claimed that it actually performed work.

About 30 years later, Giovanni Branca, an Italian mathematician, submitted to the governor of Liretto a report dealing with a turbine which had a new operating principle. Instead of taking advantage of the reaction caused by the steam issuing from pipe or jet, Branca had his steam strike the paddles of a wheel constructed somewhat like a water wheel. In this turbine, the steam pressure is first conveyed into velocity which is converted into work by striking the paddles or blades. This is the principle of the impulse turbine.

The De Laval Turbine.—From Branca's turbine there was again quite an elapse of time before inventors tackled the problem and the next step was the construction of a suitable expansion jet or nozzle which converted the potential energy of steam into kinetic energy in the most efficient manner. Although the laws governing the passage of steam through tubes varying in diameter were already known, the Swede, De Laval, must be credited with making the first practical use of the diverging expansion nozzle in combination with a turbine wheel in 1885. For the average steam pressures then prevailing, a steam velocity of 2,800 ft. per second was obtained by expanding the steam to atmospheric pressure. Inasmuch as good efficiency can be secured with a single row of blades only when the wheel velocity is about one-half the steam velocity, the De Laval turbines were run at high speeds up to 30,000 r.p.m. Reduction gearing of high ratio were a necessity and the size of the turbine was confined to about 500 h.p.

The Parson's Turbine.—At about the same time as De Laval, an Englishman, C. A. Parsons, built a reaction turbine with several reaction stages which developed 10 h.p. at 18,000 r.p.m. The results obtained encouraged him to use the same principle for several other machines which finally developed into the present day Parsons turbine, which is the only turbine utilizing the reaction principle. Slide No. 6 shows a section through an early Parsons turbine. On account of the great number of stages and consequently expensive construction this turbine is not a commercial machine for small outputs.

The Paris firm of Bregouet, which have manufactured De Laval turbines since 1894, proposed a modification of these which consisted of using several wheels for each expansion nozzle and this idea in a certain sense may be regarded as forerunner of the present day multistage impulse turbine. The most important example of this type of turbine has been produced by C. A. Curtis, who in 1896 secured a patent on the combination of an expanding nozzle with several rows of buckets and intermediate reversing buckets.

While this combination produced a turbine with tolerable efficiencies and much lower speeds than the De Laval machine, the same low speeds and a higher efficiency were obtained with a turbine designed by Professor Rateau, of France, at about the same time. For each wheel in this principle, there is a row of guide vanes which also expand the steam. However, the degree of expansion for each stage is much less than in the De Laval nozzle and consequently a great number of stages are necessary for utilizing the total pressure drop most efficiently.

The Terry Patent.—After experimenting for about ten years with different turbine types, E. C. Terry, in 1903, patented a turbine which used still another working principle. Instead of using several rows of buckets for the complete utilization of the steam energy he returned the steam to the same wheel by means of a reversing chamber. An annular steam ring or chest feeds the expansion jets, the number of which varies with the size and operating condition of the turbine. The jet directs the steam into the U shaped buckets where part of the energy is abstracted. It is then caught in the pockets of the reversing chamber and redirected for the second and third impact. What are often described as blades are in reality merely division walls between the wheel buckets or pockets. Steam is brought to the jet under control of the governor and is allowed to expand through the jet, which directs it into the bucket near the side of the wheel. In this expansion, the pressure of the steam is converted into velocity and as the steam strikes the back wall of the semi-circular bucket which completely reverses its direction the impact creates a force which drives the bucket before it, thus producing rotation of the wheel and shaft, and generating power. It can be shown that a moving bucket of this type takes from the velocity of the steam just twice its own velocity. In other words if the steam velocity entering the bucket were 2,500 ft. per second and the bucket velocity 250 ft. per second the steam leaving the bucket would have a velocity of 2,000 ft. per second. Since the expansion through the jet has converted the pressure energy of the steam into velocity energy, it is important that the buckets absorb as much of this as possible.

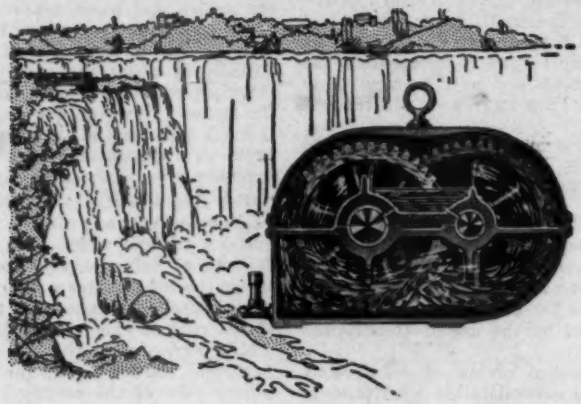
The reversing chambers accomplish this. When the steam leaves the bucket it enters a pocket of the reversing chamber of the same dimensions and shape as the bucket but set obliquely. This again turns the moving stream of steam completely around and redirects it into the bucket which has advanced to a position opposite the issuing edge of the reversing chamber. Thus the steam again gives up velocity to the buckets, and this is continued until the velocity of the steam has been completely given up to the wheel.

Generally four pockets are used for each reversing chamber and a good idea of the course of the steam may be obtained by imagining a spiral spring of four turns. The bottom turn lies flat, the next is moved over to one side a little distance, the next still farther and the next the farthest, this last turn representing the slowly moving steam making its last passage through a bucket, from which it passes into the casing and thence to the exhaust port.

The complete expansion of the steam and the absorption of its velocity by the wheel, as described above is accomplished within a small portion of the circumference of the wheel, and it is therefore possible to utilize several jets, each with its reversing chamber and each developing its own proportion of the total power. This results in considerable power capacity for a wheel of a given diameter, and inasmuch as the jets may be shut off by means of handvalves, good efficiencies are obtained at partial loads. When half load is desired for instance, one half of the jets may be closed, or cut out of communication with the governor valve. In this way the remaining jets continue to operate with their normal efficiency, there being no throttling of the governor.

In order to meet all the requirements of output and speeds for small turbines, these machines are built with wheels having diameters of from 6 to 48 inches in about eighteen different frames.

Constant Lubrication



—another feature of this good reducer

Friction annually exacts an enormous toll from manufacturers in every line of industry through premature wear of machinery, shutdowns for replacement of worn parts and loss of production.

The possibility of these losses eating into your profits is minimized, if not entirely obviated, in the Palmer-Bee Reducer by our patented oil bath, splash and gravity feed system which makes lubrication as constant as Niagara. This means that the moment the power is turned on and the gears and shafts begin to revolve all friction surfaces are *automatically* covered with a protecting mantle of oil, cushioning the shocks of meshing teeth and reducing wear to a minimum.

And although there is plenty of oil inside of the reducer, the heavy cast iron casing is so constructed that none can leak out. A grease-packed, grooved joint in addition to oil slingers makes the casing absolutely oil-tight; and, inversely, while keeping in the oil, this improved joint keeps out dust, dirt, moisture and other detrimental foreign matter.

This positive system of lubrication, in conjunction with cut steel spur gears of ample proportions, heavy through shafts and bearings of exceptionally wide area, explains the long life and satisfactory operation so unfailingly rendered by Palmer-Bee Reducers.

For a complete description of this simple, rugged and efficient reducer, write for a copy of Bulletin 445.

PALMER-BEE COMPANY
Detroit, Michigan

"World's Largest Producers Use P-B Reducers"

Palmer-Bee Speed Reducers

TRADE MILL REG. U.S. P-B MARK TYPE PAT. OFFICE

Jones Speed Reducers

Low cost, compared with other methods of obtaining speed reduction; high operating efficiency; negligible up-keep expense; foolproof; safety from injury; occupy little space—these are the major advantages of Jones Speed Reducers. Complete information in Catalogue No. 26. Write for it.

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Jones Industrial Gears

ACCURACY, high as you will find its standard among Jones machinists, is but one of many reasons for coming to Jones for gears. There's the quality of the material to be considered—whether it's cast iron, cast steel, raw hide, bakelite, forged steel. There's variety from which to fill your requirement—spur or spiral, mitre, bevel or worm. Finally there is an engineering force, skilled by thirty years experience, that is ready to work with you on your gear requirements. General Catalog No. 30 contains over two hundred pages on gears. Write for this. It is a handy reference book.

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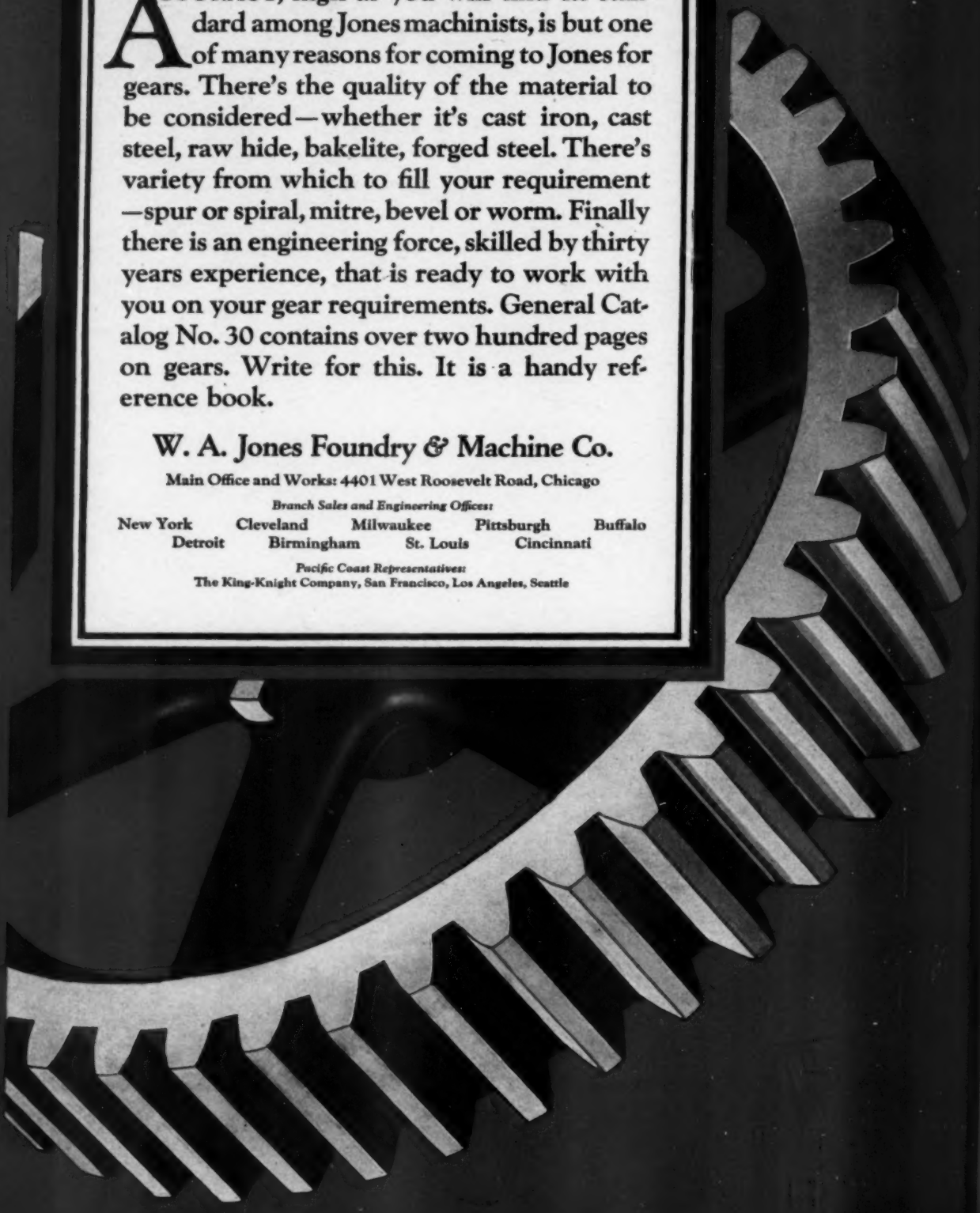

The force producing rotation and power in the Terry turbine is that incident to reversing the direction of the steam in the moving buckets. In other words, it is the force exerted against the solid wall of metal at the back of, and not between, the buckets. In this respect, this type of turbine is unique, since the wearing of the steam on this surface, however severe, can never interfere with the operation of the turbine and has practically no effect on its efficiency. This is the only type of turbine which not only has no inserted buckets or blades which introduce an element of possible danger by breakage, but is also free from change of efficiency since the steam wearing away any other type of blades alters the angle at which the steam strikes them and through which it is reversed.

Another valuable feature is found in the ability to change the jets when desired. If a turbine of this type is to be operated under certain steam conditions for a few years and then the boiler pressure is to be changed it is possible to get the maximum efficiency under both conditions by changing the jets, which is a very simple and inexpensive procedure. Changes in rating can be accomplished in the same manner.

While this type of Terry turbine is built in sizes up to about 1,000 h. p., the machine has its limitations, which are caused by the large steam volumes to be handled when operating condensing. A pound of steam at atmospheric pressure occupies 26 cu. ft. and at 28 inches vacuum equivalent to the 1 lb. absolute pressure, 333 cu. ft. or 12.7 times as much space. The nozzle and bucket areas have to be increased in very nearly the same proportion and consequently become very large. This cannot be accomplished with the Terry buckets without using very large wheel diameters and involving other complications, the U shaped bucket is therefore, not used for condensing turbines.

With the foregoing the working principles of the different types of turbines have been described.

In order to be in a position to offer the best turbine for any particular purpose, the Terry Company about sixteen years ago undertook to develop a line of multistage machines using the combination of a high pressure Curtis wheel and low pressure Rateau stages. Today almost all multistage impulse turbines are of this composite type. Terry builds them in sizes up to about 3,000 h. p., and the various frames are so constructed that it will be possible to use them as high pressure condensing, low pressure condensing, mixed pressure and bleeder turbines.

The Terry paper machine drive was then described as completely as the time allotted would permit. Complete information on the subject can be obtained in a special article dealing with it in one of the company's bulletins which they will be glad to furnish upon application.

Following a round table discussion of Mr. Muller's splendid address, the meeting was adjourned until time for the banquet at 6:30 that evening.

A Trip Through a Michigan Carton Plant

Mr. Sievert, who was the life of the party, then took the guests through his plant, The Michigan Carton Co., of Battle Creek. This mill contains one 96" Black Clawson board machine and one 120" wide, rebuilt by the Beloit people and containing ninety-six dryers placed vertical in batteries of eight. The mill was spotlessly clean and upon being asked if this cleanliness was exceptional, Mr. Sievert replied, "Absolutely not. We scrub the floor in the machine room twice a week. It is just as easy to keep a mill clean as it is to let it be dirty. The Michigan Carton mill is practically always this way or a little better." The concern has their own carton plant in connection with their paper mill. Practically all their output is finished cartons.

Banquet at Post Tavern

The banquet was held in The Post Tavern, which is noted for its beauty. In every room on the main floor, oil paintings adorn the walls. The meals are excellent and prices are moderate—qualities that recommend anyone enjoying a stop at this hotel when in Battle Creek.

Following the banquet, Mr. Sievert introduced Mr. J. L. Hopper, Congressman of the Thirteenth Michigan District, who gave an interesting talk on "How Your Congressman Feels When He Goes to Washington for the First Time." Mr. Hooper

Cementing

This is economical

There is more than one way of buying the things you need for your plant. Standardize on Duxbak Leather Belting and you can save enough to buy a much needed piece of equipment.

Let us tell you about some paper mill drives where Duxbak is saving money. If you use leather belts send for our free booklet, "There's Money in This for You." It tells you how to repair belts and to make them endless.

Schieren All-Leather Transformer Belts

The tapered blocks on Schieren All-Leather Transformers or speed change belts do not warp, crack or split because they are made of the best leather. That's why they last much longer than belts made with wooden blocks.

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"SCHIEREN BELTS DO LAST LONGER"

Starch

ECONOMY can never be mistaken for cheapness. In the matter of sizing material, starch is cheaper than an all-glue size, yet the results are identical—in fact, the paper made with starch sizing is stronger.

FOX HEAD NIAGARA SPECIAL PAPER

Our experts can show you how these starches can be used advantageously in your mill. They will gladly call on request.

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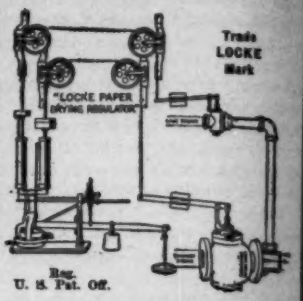
Starch

LOCKE Paper Drying Regulator

This regulator controls both live and exhaust steam for any purpose where steam is used, or it will control the direct steam when used alone. It unlike, both in construction and operation, any device that has heretofore been designed for this purpose. Controls not only temperature of the dryers when paper is running over them, but maintains the same temperature whenever there is a break in the paper. This machine is most sensitive to any changes in temperature of dryers, yet it has been found to be perfectly reliable and what is more, is not continually getting out of order. Also manufacturers of other steam specialties.



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Locke Regulator Co., 76 North St., Salem, Mass.
"Locke" Regulator Agency, 39 Cortlandt Street, N. Y. C.

Ham Feltz sez:

"Anybody can make a felt as is tough. Anybody can also make a felt as is leaky as a sieve. But the trick of making a felt that's tough as a rhino hide and at the same time leaks as the sky in a cloudburst only comes when somebody's been in the business and puts their heart and soul into it as does those who make Hamilton Felts."

Hamilton Felts

Checking up on a check valve

Sectional view, Figure 117 Screwed, Jenkins Standard Bronze Horizontal Check Valve.

Fig. 352 Screwed, Jenkins Standard Bronze Swing Check Valve.

Study the sectional view of a Jenkins Check Valve. Check up on the various features of its construction.

Note the design which allows uniformly ample distribution of metal throughout the valve. There are no weak places; nothing is skimped.

Note, too, the Jenkins Renewable Disc, which, being of rubber composition adjusts itself to any inequalities caused by matter lodging on the valve seat. The resilient disc, besides forming leak-proof contact, takes up wear throughout the valve.

Jenkins Check Valves are furnished in bronze and iron, in horizontal, swing and vertical patterns.

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JENKINS BROS., Limited
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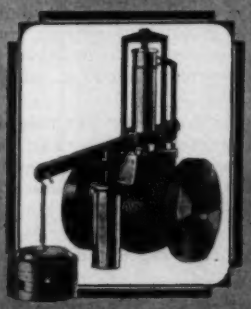
Always marked with the "Diamond"
Jenkins Valves
SINCE 1864



THE Davis Pressure Regulator is truly automatic, furnishing steam at less than boiler pressure for heating, auxiliaries, and processes. It is designed to give accurate regulation under all conditions of operation, and to stay accurate.

It has no springs, diaphragm, small ports, packing, nor auxiliary valve. The counterweighted piston type is simple, reliable, and can be tested by hand. Thousands of Davis Regulators have been in service for years and are still providing dependable service without excessive maintenance or attention.

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G. M. DAVIS REGULATOR CO.
422 Milwaukee Avenue Chicago, Illinois

DAVIS VALVE SPECIALTIES
STEAM-SAVERS SINCE 1873
VALVE MAKERS FOR OVER FIFTY YEARS

held the attention of the audience while he related some things about the routine business of the Capitol.

In the course of his talk, Congressman Hooper, stated there was little difference between the democrats and republicans in congress. The only difference which he found being that democrats were usually more at home on their feet than the republicans, and the reason for this is that the democrats come mostly from the South where the man is sent year after year to congress until he retires or dies. The experience of these representatives gives them a thorough familiarity with the rules and regulations of the great judiciary body.

This is quite the opposite, Mr. Hooper stated, in the North, where a man is sent for a term or two and the first time he votes what is considered wrong on some question he is ostracized by the humiliating method of putting him down with a tremendous majority for his opponent. Congressman Hooper made a plea for the practice of sending young men to Washington to represent districts with the plan of keeping them there as long as they behave, by reelecting them each time their terms expire.

For the benefit of those among the Michigan division who arrived too late to hear Mr. Muller earlier in the day, the same illustrated talk was repeated by Mr. Wood, advertising manager of the Terry Steam Turbine Company.

Owing to the smallness of the crowd, the Western Board division did not hold any re-election. The old officers will continue their duties another year. They are: president, Henry Bert, Monroe Paper Products Company, Monroe, Mich.; vice president, L. T. Murphy, Franklin, Ohio; secy.-treas., William H. Siever, Michigan Carton Co., Battle Creek, Michigan.

Registration

J. P. Burns, T. F. Sullivan and J. F. Nevelle, Eddy Paper Corp., Three Rivers, Mich.; Ray Holden, T. P. Brown Co., Chicago; Robert L. Eminger, National Secretary, Miamisburg, Ohio; Henry Bert and Chas. Stevenson, Monroe Paper Products Co., Monroe, Mich.; Wm. H. Sievert, Michigan Carton Co., Battle Creek, Mich.; A. F. Ford, Dayton, Ohio; Kenneth K. King, DuPont Company, Chicago; Clarence Pountain, The Paper Industry, Chicago; B. Benson, Williams Gray Co., Chicago; G. V. Cathy, B. F. Goodrich Rubber Co., Akron, Ohio; H. E. Stafford, Hawthorne Paper Co., Kalamazoo, Mich.; Alfred Bryant, Bryant Paper Co., Kalamazoo, Mich.; James W. Wright, Cable Wire Co., Appleton, Wis.; John R. Spoor, Thomas Wallington, W. M. Carroll, Martin Mulder, M. Cornelius Mulder and George H. Pountain, Allied Paper Mills, Kalamazoo, Mich.; C. L. Harter, Rex Paper Co., Kalamazoo, Mich.; M. Redmond and John Jagers, Kalamazoo Paper Co., Kalamazoo, Mich.; W. J. Shaw, J. A. Mortimer, Edward L. Beanson, Jr., Jesse E. Darling, W. A. Misick, T. H. Stowitt, Edd H. Barnes and J. E. Robinson, Michigan Carton Co., Battle Creek, Mich., and B. H. Wood, Terry Steam Turbine Co., Hartford, Conn.

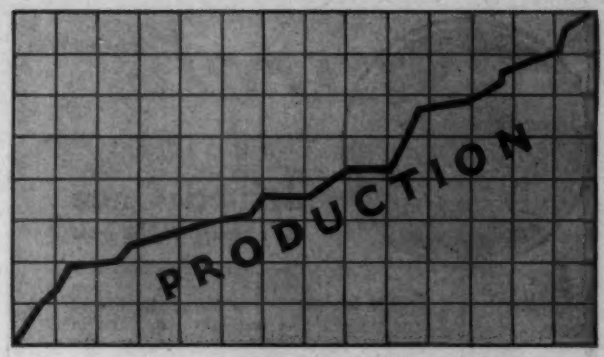
MICHIGAN NEWS

K. V. P. Pays Dividends

A dividend of 1½ per cent on the $3,000,000 common stock of the concern outstanding has been authorized by the directors of the Kalamazoo Vegetable Parchment Company and ordered paid October 1. This is the first dividend paid for a period of fully 18 months by this concern.

The erection of the company's new mill and the successful operation of this unit have raised some serious problems, all of which have been met and surmounted. The big high speed, 164 inch, Bagley and Sewall machine was an innovation and the operators of the mill are credited with doing some real pioneering in the paper industry in the successful manufacture of high grade paper on a high speed machine.

Earnings have been very satisfactory during 1926, and while no official statement as to the company's financial condition is forthcoming, it is reported on what is believed to be excellent authority that in the last nine months the company has accumulated a considerable surplus and at the same time paid off indebtedness due the banks. For several years



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*Dayton
*Denver
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*Detroit
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Flint, Mich.
*Grand Rapids
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*Portland, Ore.
Providence
Reading
*Rochester
Rockford
Rock Island
*San Francisco
*Seattle
*St. Louis
Springfield, Ill.
Syracuse
*Toledo
*Toronto
*Tulsa, Okla.
Utica
*Vancouver, B. C.
Williamsport, Pa.
Worcester

*Stocks of Oakite materials are carried in these cities.

TO INCREASE production without adding more machines or operatives is unusual. Yet OAKITE cleaning methods are frequently doing it.

In fact, in one mill, all previous production records were broken. As soon as OAKITE methods were here adopted, efficiency became greater all around. Production speeded up. Tonnage increased. For with OAKITE methods, felts were washed *on the machine.* Cleaned *thoroughly.* Rinsed *easily,* quickly.

Oakite can also be used for cleaning Fourdrinier wires, screen plates, sieve cloths, pipes and mixers.

It will pay you, as it has so many others, to call in the Oakite service man and find out what he can do for you. No obligation. Write for him to call, or for further information.

OAKITE

TRADE MARK REG. U.S. PAT. OFF.

Industrial Cleaning Materials and Methods

OAKITE IS MANUFACTURED BY OAKITE PRODUCTS, INC.
formerly OAKLEY CHEMICAL CO. 16A THAMES ST., NEW YORK, N.Y.

Joined Once
for the life of the belt

Crescent Belt Fasteners make a permanent joining which will 'stay put' for the life of the belt. No holes are punched in the belt. The prongs of Crescent Rivets find their way through the belt without cutting or injuring the power-carrying lengthwise fibres. The belt ends are forced tightly together and compressed which eliminates raveling and fraying. No parts subject to wear. Write for the Story of Proper Belt Joining. Crescent Belt Fastener Co., 247 Park Ave., New York, N. Y.

Write for Catalogue

CRESCENT
BELT FASTENERS

"Ohio" Products

Cylinder Grease
Cup Grease
Shafting Grease
Auto Grease
Journal Grease
Mine Car Grease
Graphite Grease
Mica Grease
Fibre Grease
Bearing Grease
Rope Grease
Chain Grease
Gear Grease
Gear Shield
Wool Elastic Grease
Wool Yarn Grease
Wool Waste Grease
Block Grease
Cold Neck Grease
Hot Neck Grease
Loco Rod Grease
Crank Pin Grease
Motor Oil
Engine Oil
Turbine Oil
Compressor Oil
Ice Machine Oil
Commutator Compound

Industrial Lubricants of Superior Merit

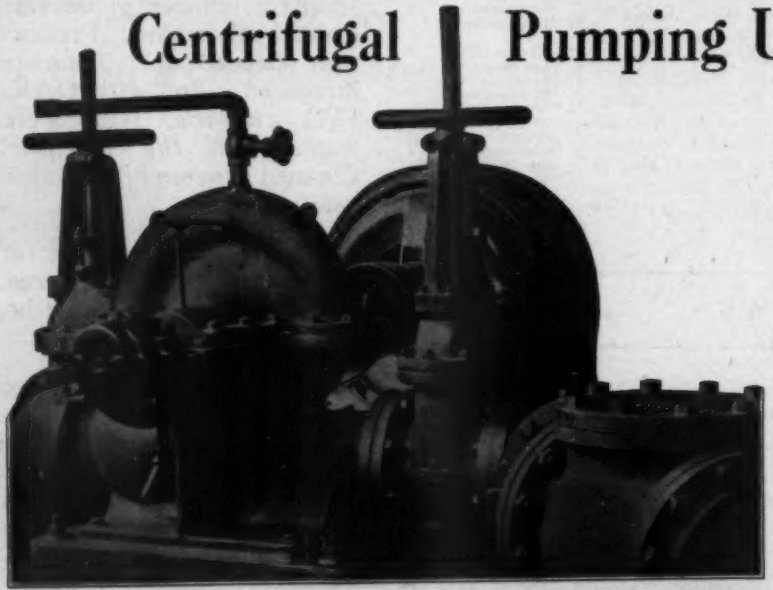
Write for Samples and Prices

HI HI

Special Lubricants for Paper Mill Service

The Ohio Grease Co.
Dept. 5
Loudonville Ohio

Centrifugal Pumping Units



Which Are Suitable For Paper Mills

There are different kinds of pumps for different uses in Paper Mills. You don't have to buy an experimental pump if it has an Allis-Chalmers name-plate. The right pump for each particular service has been proven by many applications and can be furnished from a complete line.

Write for Bulletin 1632 H.

ALLIS-CHALMERS
MILWAUKEE, WIS. U. S. A.

the mill paid 6 per cent dividends annually on its common stock. It is expected these payments are now to be resumed permanently.

George H. Gerpheide Named Head of Hawthorne Paper Co.

George H. Gerpheide, first vice-president of the Allied Paper Mills, has been elected president of the Hawthorne Paper Company, Kalamazoo, and will take office Oct. 1, filling the position left vacant by the death of the late A. H. Dwight. Mr. Gerpheide was the unanimous choice of the board of directors.

His rise in the paper industry has been rapid. He started in the paper game at Otsego with the Bardeen Paper Co., working his way up to the position as manager. When the Allied Paper Mills was formed, he was made first vice-president and purchasing agent for that organization.

There have been many changes in the Hawthorne Paper officials in the last year. It was in September, 1925, that A. H. Dwight was stricken with apoplexy and forced to abandon his duties as president. Mr. A. G. Wightman and Robert L. Pease, superintendent and vice-president, respectively of the concern, left the early part of October for the East where they purchased the firm of Knowlton Brothers at Watertown, New York.

It was about a year ago that Horace M. Gimlin came to Kalamazoo and was named vice-president and director of sales. He has since resigned to accept a Pacific coast sales agency for a large paper concern. F. C. Clark, who came to Kalamazoo from Maine at the request of Mr. Dwight was in turn secretary and vice-president of the Hawthorne Paper Company until July, when he resigned to purchase part interest in the East Hartford Manufacturing Co., Hartford, Connecticut.

Kalamazoo Mill Holds Annual Fall Fair

Employees of the Kalamazoo Paper Company last week staged their fourth annual fall fair, an event devoted almost wholly to the display of garden products, grown in the gardens of the workers, or to articles made personally by these operatives. Housed in the mill's social room, it was a most creditable exhibit.

The garden products included an attractive display of fruits, vegetables and canned goods. Two large tables were devoted to embroidery, crochet work, tatting, and other fine examples of the art of the needle. There were over 40 individual entries in this department and fully 200 pieces of work were shown.

An excellent example of cabinet work was found in three pieces of furniture made by J. C. Estes, of the No. 5 mill, exclusively from the walnut backs of coating brushes. Mrs. William Miller, of the No. 3 mill, made wicker trays and servers with glass bottoms that would be a credit to any establishment.

Certain novelties not competing for prizes were found in examples of bed spreads over 100 years old, knitting of the early eighteen hundreds, interesting old volumes, and other family heirlooms.

Prof. W. E. Praeger of Kalamazoo College, and Mrs. Nola Z. Snyder, of Gilmore Brothers, judged the displays. The prizes of $10, $5 and $3 in each of the three classes will be awarded at the company's annual winter picnic.

C. & E. I. Officials Visit Kalamazoo Mills

Inspection of Kalamazoo's paper mills was made this week by a party of officials of the Chicago and Eastern Illinois Railroad, headed by E. S. Stephens, general freight agent with offices in Chicago. Mr. Stephens explained that the jaunt was strictly educational in nature and covered the industries of Kalamazoo and Grand Rapids, particularly paper and furniture.

The party registered on the evening of Tuesday, September 21st, at the Park-American Hotel and devoted all of Wednesday to their visit. They lunched at the Kalamazoo Vegetable Parchment community house. In addition to Mr. Stephens, the party included H. J. Dentzman, assistant general freight agent at St. Louis, and M. F. Enreight, East

RHOADS Watershed Tannate Leather Belting

Something More Than a Confirming Order

"ENCLOSED please find confirmation order to duplicate Tannate Belt furnished us May, 1923, for cone stack drive on our Fourdrinier machine.

"We take this opportunity to express our appreciation for the excellent service obtained with this belt.

"Belts previously used on this drive gave us constant trouble and would not last over three months. Your Tannate Belt has run over three years and during this time has given us no trouble whatsoever. Subsequently, we have equipped quite a number of our hardest drives with your Tannate Belt with most gratifying results.

"Hoping that the Tannate Belt ordered today will fully come up to your standard of quality and service, we are—"

Rhoads Service Guarantee covers every Tannate Belt sold.

Use Rhoads Tannate Lace Leather. It outlasts rawhide three to five times.

J. E. RHOADS & SONS

PHILADELPHIA.....47 North Sixth Street
NEW YORK.....112 Beekman Street
CHICAGO.....334 West Randolph Street
ATLANTA.....89 South Forsyth Street
CLEVELAND.....1234 W. Ninth Street

Factory and Tannery: Wilmington, Del.

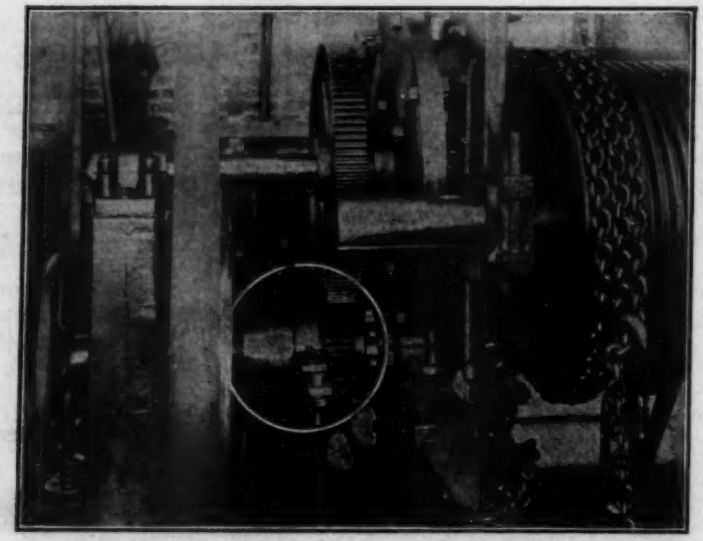
THE JOHNSON FRICTION CLUTCH

As Used on a

Fourdrinier Wire Cloth Loom

Single Clutch with Pulley

The No. 8 JOHNSON Single Friction Clutch is used on this machine. In the illustration below, note position of clutch within the circle. This Fourdrinier Loom manufactures brass and phosphor Bronze wire cloth used in large paper mills in making paper. For over ten years JOHNSON Clutches have given entire satisfaction on these machines.



COURTESY: The Wm. Cabble Excelsior Wire Mfg. Co., Brooklyn, N. Y.

JOHNSON Clutches are adapted particularly for the clutch requirements of every light-powered paper machine built. They start smoothly and quickly, stop promptly, and control absolutely.

Thousands in Use

Thousands of plants all over the United States depend on JOHNSONS for perfect clutch service. That's because JOHNSONS justify so fully their high reputation for performance.

JOHNSON Clutches are making splendid records on paper machines for Langston, Pusey & Jones, Wesel Mfg. Co., E. C. Fuller & Co. and countless other manufacturers. JOHNSONS are internationally endorsed.

A Dependable Clutch

Tell us your clutch requirements for paper machines. Our engineering staff will co-operate. We specify the best clutch for the place and it invariably does the work. Equip with JOHNSONS.

Write for Catalog "P. I."

THE CARLYLE JOHNSON MACHINE CO. MANCHESTER CONN

St. Louis; N. C. Calvert, Dallas; J. D. Beeler, Evansville; L. B. Grantham, Little Rock; D. W. Agnew, Memphis; Ashley Johnson, Shreveport; R. D. Dirhold, Tulsa, and J. E. Whittemore, Grand Rapids, all general agents of the line.

It was expected originally to have T. C. Powell and J. B. Ford, respectively, president and vice-president of the system, with the party, but at the last moment a business session in Chicago demanded their presence there.

Kalamazoo Valley Cost and Technical Men Meet

The Kalamazoo Valley branch of the Cost and Technical Associations of the Paper Industry met Wednesday afternoon and evening, September 29th at the Sauganash Country Club, Three Rivers. There were about 50 guests for the dinner session, mills from Elkhart to Grand Rapids being represented. There were interesting talks by L. P. Sullivan and Paul Ulrich of the Eddy Paper Corporation, and H. G. Crokett of Scovell Wellington and Company of New York City. The latter spoke on "Standard Costs." Music was furnished by the Eddy Quartet and the Junior Orchestra of Three Rivers.

Scratching his finger the latter part of August at the Standard Paper Mill, Kalamazoo, where he was employed as a pipe setter, caused the death of William Baird, 40, Tuesday night, September 21st.

NORTHERN NEW YORK NEWS

Albany Port Service Starts Soon

Albany ocean port service was expected to start Oct. 5. Announcement of the first steamship service is announced by Donald G. Kibby, traffic manager of the Albany Perforated Wrapping Paper Company. From October until Dec. 1, when ice usually forms in Nova Scotia waters, vessels will arrive in Albany every week loaded with pulp. Traffic experts say that 300,000 tons of wood pulp will be handled through the Albany port if provisions are made to handle it. The A. P. W. Company will bring 10,500 tons yearly. Part of it is to be used in the Albany plant and the rest is to be distributed by train and truck to points as far as 400 miles distant. Next year, the A. P. W. Company plans to go into the importing and distributing business on an even larger scale.

Early this year the company inaugurated plans to import wood pulp for distribution to other companies and several hundred tons were distributed. The cargoes are loaded in Nova Scotia and come to New York and up the Hudson river without being broken. When loaded the ships draw 14 feet of water.

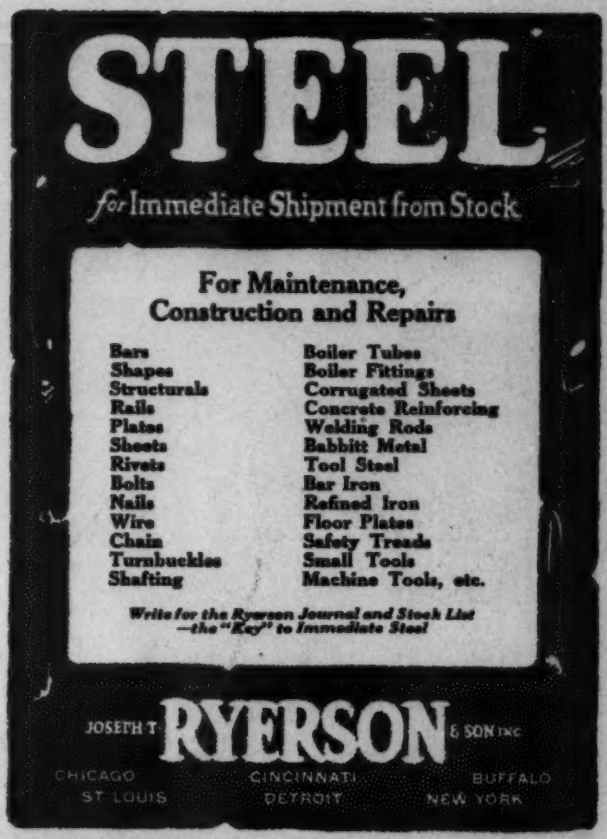
A considerable amount of pulpwood is being brought to Oswego via the St. Lawrence river and Lake Ontario. The steamer Terje with 780 cords on board cleared from Newfoundland. The pulpwood is unloaded at the state barge canal terminal and is reloaded directly onto freight cars.

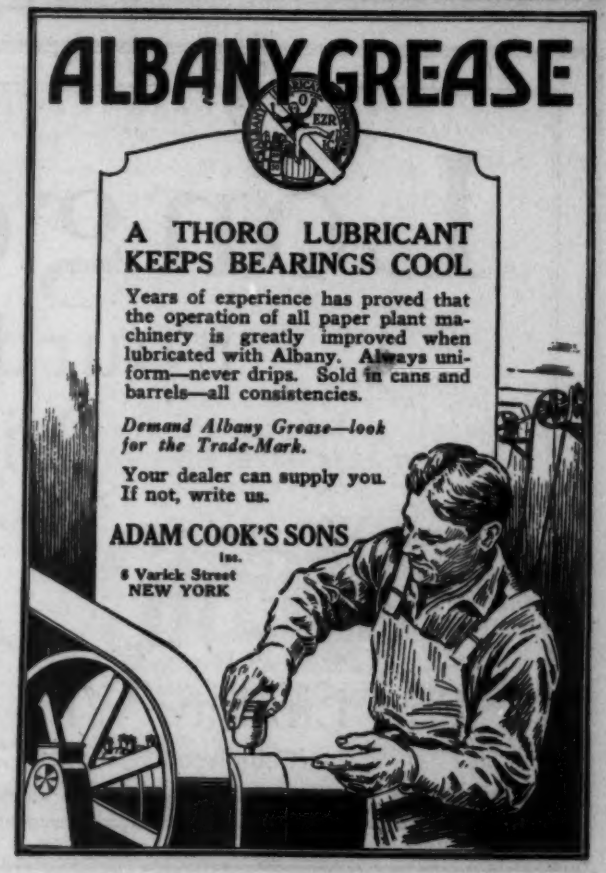
Claiming that its plant is assessed for 20 per cent more than the proportionate valuation of all other property in Fulton, the Victoria Paper Company has secured a writ of certiorari directing the assessors of the city of Fulton to show cause why the assessment should not be reduced.

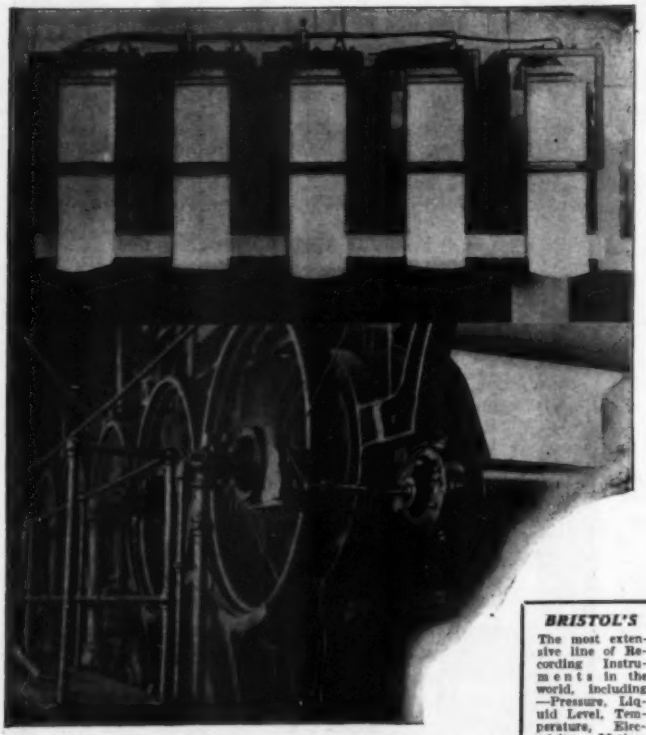
Five Million Trees to Be Planted

Before snow flies this fall, it is expected that no fewer than 5,000,000 trees will be planted in New York State this year. Orders on file at the office of the conservation commission indicate that all records will be broken. The indications are that the fall plantings will equal those of the last four seasons combined and will be seven times the number planted in 1922. Up to Sept. 15, orders for practically 2,000,000 trees had been received. This was in addition to 3,000,000 trees which are being planted on state land by conservation commission crews.

One noteworthy feature of the tree planting program is the large number of community and town forests which have




ALBANY GREASE
A THORO LUBRICANT KEEPS BEARINGS COOL
Years of experience has proved that the operation of all paper plant machinery is greatly improved when lubricated with Albany. Always uniform—never drips. Sold in cans and barrels—all consistencies.
Demand Albany Grease—look for the Trade-Mark.
Your dealer can supply you. If not, write us.
ADAM COOK'S SONS
Inc.
6 Varick Street
NEW YORK



A typical installation of Bristol's Electric Tachometers with magneto installed directly on the paper machine. The recorders are some distance away.

BRISTOL'S
The most extensive line of Recording Instruments in the world, including—Pressure, Liquid Level, Temperature, Electricity, Motion, Speed, Humidity, Etc.

Where Good Results Depend on Controlled Speed

Quality or Quantity of paper, or both, often are governed by proper control of speed of the paper machine.

Bristol's Electric Tachometer—consisting essentially of a Magneto and an instrument which is a Voltmeter—records and indicates the speed of the paper machine in feet per minute.

The Magneto of the Bristol's Tachometer is so designed that wear cannot affect the voltage. Brushes and commutator segments are constructed of a special non-corrosive alloy, exceptionally long lived, and there is no change in terminal voltage due to variations in contact resistance. Greater accuracy is maintained and little lubrication or attention is required, making this instrument very suitable for installation in the paper mill.

Write for Catalog No. 1700

The Bristol Company Waterbury, Connecticut

FOR 36 YEARS MAKERS OF BRISTOL'S RECORDING INSTRUMENTS

Longcrimp Fourdrinier Wires

USED EXTENSIVELY ON
Kraft, Wrapping and Newsprint Machines

Give Longer Average Service than the Regular Weave

Made By

The Lindsay Wire Weaving Company

(Collinwood Station) CLEVELAND, OHIO

See page 383 in the 1926 Paper and Pulp Mill Catalogue

been started. It is pointed out by the conservation commission that if this program is followed out, the next generation will derive a large part of its income from these publicly owned forests. More than two-thirds of the cities in New York State have municipal forests, which not only protect their water sheds but insure a large income in the future.

"In the last five years," says Conservation Commissioner Alexander MacDonld, "reforestation has made remarkable strides in New York State as people acquired a better understanding of the need of more forests and the profits from the use of idle land not suited to the growing of agricultural crops. This increase in interest has not been limited to any particular section or class of people but has been general throughout the state. In many counties the reforesting of idle land has been made an agricultural project for the growing of farm forests and the improvement of farm wood lots."

To Make Kraft Paper

Installation of machinery for the making of Kraft paper is practically completed at the Granby plant of the Arrowhead Mills, Inc., which will be opened in the near future at Fulton.

This plant formerly produced newsprint and felt roofing, and several changes have been made necessary before it could be utilized for the manufacture of Kraft paper. Changes at the Arrowhead plant at Battle Island, where a machine formerly used in the manufacture of Kraft paper was converted into a machine for the manufacture of lightweight felts, were largely responsible for the changes in the Granby plants. The Battle Island plant will continue the manufacture of felts, while the Granby plant will manufacture the Kraft paper formerly made at the Battle Island plant.

H. J. Kellogg Takes New Position

Henry J. Kellogg, manager of the Turner Falls mill of the International Paper Co., has accepted a position as manager of manufacture of the West End Paper Co., of Carthage and the Oswegatchie Paper Co., of Natural Dam. Both mills are under the same management and are not far distant from each other. Mr. Kellogg takes up his new work sometime early this month.

Mr. Kellogg has been connected with the paper industry for the last 21 years, 18 of which have been spent with the international Paper Company. He has been manager of the Turner Falls plant for the last ten years. During his administration, the mill has become the model plant of the company's properties in the specialties line.

Announcement has been made by Floyd L. Carlisle, one of the largest stockholders of the Oswego Rayon plant, that the capacity of the plant would be doubled. Additional machinery has been ordered. The plant now employs 260 hands.

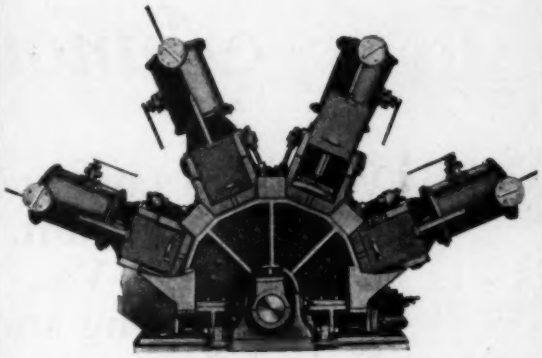
Two large digesters have been brought from New York to Ogdensburg to be installed in the new sulphite mill being erected at the Algonquin plant. Owing to the large size of the digesters, it was impossible to ship them by rail and they were sent by way of the barge canal and the St. Lawrence river.

John McCambridge

John McCambridge, aged 65 years, superintendent of the Unity Paper mills in Potsdam, died Sept. 23. Mr. McCambridge was born in Ticonderoga and he had been in the paper mill business all his life. His father also had been a paper maker. He came to the Unity mills about 25 years ago, the mills then operating under a different name and management. He was unmarried.

Petitions are being circulated for the creation of a water storage reservoir on the Oswegatchie river and its tributaries. The new board would do away with the present regulating board which has been in existence 60 years. None of the paper companies with plants located on the Oswegatchie

"Repeat Orders Are the Best Indorsement"



International Grinders

Built with either three or four pockets — heavy construction throughout.

Pockets held in position by two large steel bolts—bridge trees extra heavy.

Pockets large in size, so that frequent refilling is unnecessary.

Save-alls below outside pockets catch all pulp when pockets are opened.

Special tapered bronze bushings —thread on inside only.

Bearings very large—wedge adjustable.

Equipped with Barker valves which are designed so that they stay tight.

GREEN BAY BARKER COMPANY
GreenBay Wisconsin
"Machinery Manufacturers"

Announcement

We have concluded negotiations with Mr. W. D. Mount, Consulting Engineer, Lynchburg, Va., giving us exclusive manufacturing and selling rights in the United States, covering the well-known Mount line of paper mill equipment:

Continuous Causticizing Systems
Lime Recovery Plants
Rotary Vacuum Filters
Pulp Washers
Calcining Furnaces
Molten Caustic Equipment
Caustic Flakers
Dryers

Mr. Mount will act as Consulting Engineer with offices at 602 Peoples National Bank Building, Lynchburg, Va.

Descriptive bulletins on request

SWENSON EVAPORATOR CO.
(Subsidiary of Whiting Corporation)
Harvey, Ill. (Chicago Suburb)

SWENSON
EVAPORATORS – *any capacity for any liquor*
Pulp Mill Machinery – Continuous Crystallizers
Beet Sugar Equipment – Chemical Machinery

PI10-Gray

are in favor of the change which would cost approximately $2,000,000 and which, it is claimed, would benefit only a few of the power owners.

The pump house of the Mohawk Valley Paper Co., at Little Falls, was destroyed by fire Sept. 16. The loss was about $10,000, covered with insurance. The loss of the pump house did not cause the mill to shut down as the company possessed some wells on its property which enabled it to continue operations.

Motion for a bill of particulars has been granted in the case of the West End Paper Co., of Carthage, against Benno and Lois C. Levison. The action was brought to recover $17,000 paid by the plaintiff to the defendant Aug. 28, 1924, on a $36,000 contract for pulpwood which the defendant did not deliver. The defendant interposed a counter claim asking that the plaintiff be compelled to pay the balance of the contract price and $2,000 additional for expenses incurred.

Pulp and Paper Specialists Meet at Schenectady

Paper and pulp mill specialists of the General Electric and Canadian General Electric companies met with representatives of the pulp and paper industry at Schenectady, October 6 and 7, to discuss the problems of the industry in their connection with electrical development. A number of papers were read and talks given during the two days involved, and the business schedule was as follows:

October 6, Morning Session.—Talk, "Paper Machine Drives and Their Essential Requirements," by H. W. Rogers, discussing various types of paper machine drives, both single-motor and sectional, including the General Electric BTA motor drives for small machines and adjustable speed mechanical turbine drives. Talk, "The Trend in Paper Mill Electrification," by R. H. Rogers, showing motor applications in the latest up-to-date mills including automatically controlled magazine grinders and synchronous motors on Nash pumps and direct connected to Bird screens. Talk, "Supercalender Drives," by C. F. Lee, devoted to double voltage, double frequency and double motor supercalender drives.

October 6, Afternoon Session.—A trip through the General Electric factory, during which the general equipment throughout the factory and new and interesting applications were witnessed. An exhibit of switchboard apparatus and an informal talk on switchboards were included, as well as a demonstration of high voltage and frequency.

October 7, Morning Session.—General discussion of paper mill problems, led by the paper mill representatives. Paper, "New Developments in Steam Turbines," by E. Pragst; paper, "Automatic Control of Motors in Paper Mills," by W. C. Yates; paper, "New Developments in Flowmeters," by R. E. Woolley.

A number of social activities were arranged for the guests. The evening of the first day was spent entertaining the visitors and, the afternoon of the second day, the Mohawk Golf Club was visited by many for the purpose of indulging in golf, tennis and other sports. The remainder of the delegates made another trip of inspection through other parts of the General Electric plant. The evening of the second day was given over to a dinner.

The Carborundum Co., Niagara Falls, N. Y., announces the appointment of Mr. W. J. Ulrich as district sales manager of the coated abrasive sales division in the Detroit territory. Mr. Ulrich will have complete charge of the sales of Carborundum Brand Garnet Paper and Cloth, Carborundum Paper and Cloth, Aloxite Paper and Cloth, and the Carborundum Brand Waterproof Finishing Papers.

Upon the suggestion of the War Planning Division of the War Department, Mr. Norman W. Wilson, president of the American Paper and Pulp Association, recently appointed Col. Philip K. Fletcher of the Fletcher Paper Company, Alpena, Michigan, as liaison officer to represent the paper industry in contacts with industry, being maintained by the War Department.

Overhead Lines in paper plant

Overhead Pipe Lines

SUCCESSFUL overhead pipe lines have been made possible with "Michigan" Combination Steel and Wood Pipe. A special steel flange fitting eliminates the ordinary leaks and troubles.

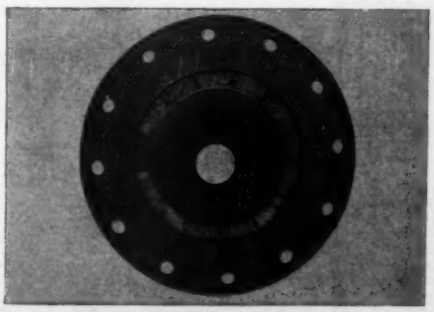
This flange fits over the tenon of the pipe and is used simply as a connection. No metal is exposed to the liquid, which keeps it free from specks of rust to harm the paper.

"Michigan" Combination Steel and Wood Pipe is made of seasoned wood, reinforced with spirally wound steel bands. The steel exterior is protected by two coats of asphaltum, applied hot. There is no chance for corrosion or bursting under pressure.

"Michigan" pipe is stronger, more durable, and has 20% greater carrying capacity than iron pipe.

The number of paper mills using "Michigan" pipe is increasing daily. It is found best for conveying white water, sulphite, ground wood and pure water.

Send us your blueprints and we will gladly furnish estimates on pipe and fittings to suit your requirements.



End view of Special Flange Coupling. Note metal outside

Tell us about your piping problem. If necessary, one of our engineers will gladly call and go over it with you. Remember, every piece of pipe and every bit of work is guaranteed.

MICHIGAN PIPE CO.

Dept. 17 **BAY CITY, MICH.**

Appleton

Fourdrinier Wires

Cylinder Wires

Save-All Wires

Washer Wires

In Brass and Phosphor Bronze

"Appleton Wires Are Good Wires"

APPLETON WIRE WORKS, Inc.
Appleton, Wis., U. S. A.

Paperboard Industries Association Meets

Members of the Paperboard Industries Association met at the Congress Hotel, Chicago, in group sessions on Wednesday, September 22, morning and afternoon, and on Thursday morning, September 23, followed by a joint session with the members of the three groups in attendance on the afternoon of Thursday, September 23. Preceding the joint session, Thursday afternoon, members gathered for a special luncheon at 1:00 P. M. The meetings were well attended and were productive of much constructive work.

The Folding Box Group meeting was held Wednesday morning with Mr. Wm. J. C. Karle presiding. The most interesting subject considered at this meeting was the report of the special committee on specified inks. This committee was appointed because in the past certain ink manufacturers, in the effort to promote the use of their inks, have gone directly to the folding box buyer and endeavored to have him demand the use of certain inks. As a direct result of the work of the committee, ink manufacturers have acceded to the committee's request that the practice be discontinued.

The Paperboard Group meeting was held Wednesday afternoon with Vice-President Walter P. Paepcke presiding. There was an interesting discussion regarding the question, "For What Trade is Waterproof Liner Testing Below 85 lbs. Manufactured?" After a thorough discussion of this subject, the members passed a resolution to the effect that it was the sense of the meeting that linerboard manufacturers should not knowingly sell, or continue to sell, 65 lb. test liner (or other grades of liner testing less than 85 lbs.) where it is felt that the board is to be used in so-called "test" boxes. A special committee was appointed to co-operate with a similar committee representing the Container Group to consider this subject and also to ascertain whether it is feasible to secure a change in parcel post regulations so as to require the use of liners testing 85 lbs. minimum in parcel post boxes; also to determine if it is advisable to have a distinguishing color for test boards below 85 lbs.

Vice-President J. P. Brunt presided at the Container Group meeting Thursday morning. The subject of specifications for fibre containers intended to be used in export service was considered and the group requested the Standardization Committee to preapre proper specifications for corrugated and solid fibre boxes to be used in this service. Discussion was also had with regard to proper specifications for boxes to carry weight limits in excess of those now permitted by the carriers' specifications. Throughout the meeting there was a pronounced sentiment that the corrugated shipping container industry must be rid of the use of inferior liner boards, i. e., those testing under 85 lbs. minimum. General Manager Browder submitted a report containing up-to-date information on traffic and classification subjects.

The Joint Session

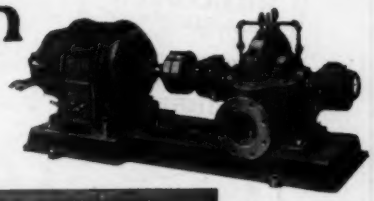
At the meeting of the three groups in joint session Thursday afternoon, President Burbin reported for the Executive Committee. The committee approved the Statistical Committee's recommendation with reference to the inauguration of statistical reports covering the various grades of pulp. The Executive Committee also directed that a suitable design for a certificate of membership be prepared, a copy of which is to be given to each member. Another recommendation of the Committee was that arrangements for a special dinner be made, to be attended by all members on Thursday evening, November 18, following the annual meeting and election of officers.

Chairman J. P. Brunt of the Sales Promotion Committee, in his report, urged that a more intensive use be made of the reports which are made every 60 days containing the details of surveys made at the request of shippers.

Chairman F. J. Kress of the Research Committee reported upon work carried on at the Mellon Institute. In accordance with a plan adopted at the meeting, one of the Research Fellows at the Institute is being directed to visit members' plants, with a view to developing subjects of general interest to the industry, regarding which scientific research investigations may be of value.

The Standardization Committee and the Special Committee on Standards submitted a draft of a booklet on standards

Pumps—free from the costly burden of poor design



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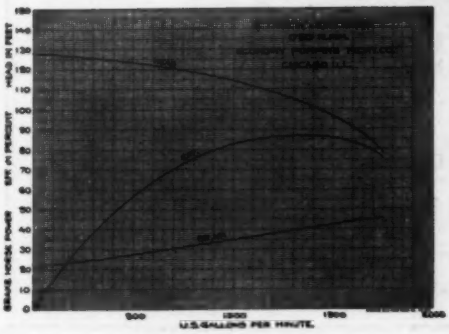

Performance Curve

That old time pump — "Hasn't given any trouble for years."

Investigate! How much power is it taking?

In some mills Economy pumps are saving 23% of the power bill for pumping. At this rate you could afford a new pump.

Economy pumps are free from the costly burden of poor design.

Economy
Pumping Machinery Company

83 North Curtis Street Chicago, Illinois

HILL CLUTCH
MILL EQUIPMENT

Brim-full of new information!

The New General Catalog of

Hill Clutch Mill Equipment

is just off the press

It illustrates every phase of "HILL CLUTCH" MILL EQUIPMENT. In addition, it contains tables, diagrams, engineering data, etc., which eliminates guess work in the selection of proper power transmission units. Every paper mill man interested in Power Transmission should have a copy. *Write Us.*

The Hill Clutch Machine & Foundry Co.

Power Transmission Engineers

General Office and Plant
CLEVELAND, OHIO

260 Paper Mills

ARE USING

ROEPER TRAVELING CRANES

Electric Hoists
Chain Hoists or I-Beam Trolleys

"THIS PROVES THEIR QUALITY"

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They increase production, save labor and decrease wastage on Calenders. Write for literature. Special Machinery—Couplings—Gears.

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Estimates and gear advice promptly and cheerfully given

Send for Our Catalog of Stock Gears

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Meisel Sheet Cutters

Automatic Intermittent Feed Sheet Cutting and Slitting Machine

Cuts all kinds and thicknesses of paper from news to the thickest box board, various kinds of cloths, combined cloth and paper, tinfoil and other material taken from the web.

Sheets up to 132 inches in length may be cut

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A Complete Service

Here is a line of Power Transmission Machinery that offers you every device required for the modern, efficient transmission of power—plus a prompt fulfilment of customers' needs.

Shafts Friction Clutches Belt Tighteners
Couplings Pulleys Sheaves
Collars Belt Idlers Bearings

Your files are incomplete without the Falls Handbook 18B. Send for it today.

Falls maintains a staff of efficient, capable engineers to aid you in the solution of any power transmission problem. Make use of them whenever the occasion requires.

The Falls Clutch & Machinery Co.
KENT, OHIO
204-208 Fulton St. NEW YORK
52-56 Purchase St. BOSTON, MASS.

which is proposed to contain the revised gauge lists, standard mill specifications, etc.

Dr. E. O. Merchant, the Association's economist, gave a report on the subject of "General Business Conditions and the Paperboard Industries." In this he referred to the trend of business barometers, wholesale commodity prices, freight car loadings, the building industry, money rates, the stock market, the outlook for the future, etc.

The meeting adjourned with the announcement by President Durbin of the next meeting, which is to take place in New York City, November 16, 17 and 18, at the Waldorf-Astoria Hotel.

Measuring the Oxycellulose Content of Paper

At one of the sittings of the Division of Cellulose Chemistry of the American Chemical Society in Philadelphia during the golden jubilee meeting Friday, September 10, 1926, William R. Brode, of the Paper Section, U. S. Bureau of Standards, presented a report on the determination of the copper number of paper which gave the manipulations used in some detail. The copper value of a pulp or paper indicates the extent of hydrolysis the sample has undergone. He first described the preparation of the paper sample.

Preparation of the Paper Sample.—Because of the heavy sizing and hard finish of the paper to be tested it was found impossible to obtain accurate results which could be duplicated on the sheet of paper or even if the paper were cut into very small squares, although in this latter case much more uniform results were secured than in the first case, Uniform and accurate results were obtained, however, by the use of a paper grinder. This grinder, which was built by the American Writing Paper Company, defiberated the paper in a dry condition without heating it and with very little cutting of the fibers.

The preparation of the various solutions employed in determining the copper number of the sample received careful treatment, the formulas and manipulation of the reagents being detailed as follows:

Preparation of Solutions

1—**Copper Sulphate** (Fehling Solution A).—To 4 liters of distilled water are added 277.3 grams of copper sulphate and the mixture shaken at intervals until solution has been effected. The copper sulphate should be of high purity and as free from iron as possible.

2—**Alkaline Tartrate** (Fehling Solution B).—One hundred and fifty grams of sodium hydroxide of good quality and 500 grams of sodium potassium tartrate are dissolved in 1,500 cc. of distilled water.

3—**Fehling Solution** is prepared by the careful addition of the copper sulphate (A) solution to an equal amount of the alkaline tartrate solution (B). It may be kept ready mixed but should in this case be carefully protected from air and light, as it is apt to undergo changes which render its indications unreliable. Before using a mixed solution which has stood for some time, a small amount should be diluted and heated to boiling for a few minutes. A perfectly clear solution indicates that the solution is still satisfactory for use. It is, however, preferable to keep the two solutions separate until they are needed.

4—**Molybdophosphoric Solution.**—100 grams of sodium molybdate (43 per cent Mo.) and 75 cc. of phosphoric acid (83 per cent) are dissolved in a solution containing 275 cc. concentrated sulphuric acid and 1,750 cc. of water.

The solution should be filtered through an asbestos mat in a Gooch crucible to remove any undissolved matter.

5—**Potassium Permanganate Solution.**—6.25 grams of potassium permanganate are dissolved in 1 liter of distilled water and filtered through an asbestos mat in a Gooch crucible and then diluted to a total volume of four liters.

Standardization

The standardization is done according to the directions given in Circular 40 of the Bureau of Standards, with certain modifications due to the difference in strength of the potassium permanganate solution. In a 400 cc. beaker dissolve 1.5 to 2.0 grams of sodium oxalate in 150 to 200 cc. of hot water,

Like Finding New Power

Between the Power Producing plant and the operating machine often will be found great losses of power. That costs money.

The problem of securing proper Power Transmission for continued, economical performance finds a happy solution in the selection of Wood's Power Transmission Appliances. That saves money.

There are definite, tangible power savings effected when you install the T. B. Wood's Line of Power Transmission Machinery, equipped with or without the smooth running, oil saving, money saving Wood Fafnir Ball Bearings.

There is a Wood's Product that helps to solve any Power Saving problem and there is a Wood's Dealer near you who is equipped and competent to assist you on any Power Transmission question.

T. B. Wood Sons Co.
Chambersburg, Pa.

NEW ENGLAND BRANCH: Cambridge, Mass.
SOUTHERN BRANCH: Greenville, S.C.

Makers of Power Transmission Machinery Since 1857

Shafting, Cast Iron Hangers, Pulleys, Flexible Couplings, Friction Clutches, Short Center Belt Drives, Hanger Boxes, Pillow Blocks, etc., equipped with or without Wood-Fafnir Ball Bearings.

The Growth of ROOTS Principle

from primitive Water-Motor to modern, high-efficiency ROOTS Rotary Pumps

The Roots brothers operated a woolen mill in Southern Indiana and, in 1859, while searching for a better means of driving their machinery than was afforded by the undershot water wheel, they devised a two-impeller water motor, with wooden rotors and a steel case. In principle it was successful, but in its first trials, the swelling of the rotors caused them to stick in the case.

After shaving the rotors down with a jack plane, the water motor was being turned by a belt, when a bewhiskered foundryman, curious as to its construction, looked into the top and his hat was blown from his head. "That's a better blower than a water motor," he said. "This machine will melt iron in my cupola."

His remark was really the beginning of a manufacturing business that has made the Roots principle famous, and has made Roots Rotary Positive Blowers and Pumps the standard high efficiency rotary pumps for gases or liquids in all industries.

The application of the Roots principle followed a logical sequence. From water motor to blowers; then, by reason of its positive displacement, to fluid meters. With the growth of the gas industry, Roots equipment was applied with unqualified success to boosting and exhausting service, and then, because of its ability to handle all kinds of liquids, to general pumping uses, from immense water works and irrigation pumps to small circulating units.

Roots equipment dominates many fields of use. Its efficiency (85% or better) recommends it to you for your own requirements.

The P. H. & F. M. ROOTS CO.

CHICAGO
Peoples Gas Building

CONNERSVILLE, INDIANA

NEW YORK
120 Liberty Street

ROOTS

KAEICKER NO. I

80° to 90° and add to this solution 6.5 cc. of sulphuric acid (1:1). Titrate at once with the potassium permanganate solution, stirring the liquid vigorously and continuously. The permanganate solution must be added slowly, not more than 10 to 15 cc. per minute, and the last 0.5 to 1.0 cc. must be added dropwise with particular care to allow each drop to be fully decolorized before the next is added. The temperature of the solution at the end should not be below 60°.

Procedure

Determinations are always carried out in duplicate and if possible in triplicate, the final value being an average of these separate values.

One and a half grams of the ground paper sample is added to a solution of the following, after a temperature of 100° has been reached: 20 cc. of copper sulphate solution, 25 cc. of tartrate solution and 125 cc. of hot distilled water. This mixture is heated in a 500 cc. widemouth Erlenmeyer flask in a water bath containing 30 per cent calcium chloride. The temperature of this bath is usually maintained at about 110° to 115° so as to keep the liquid in the flask at a gentle boil during the time it is being treated. The temperature of the copper solution should not go below 100° during the period of treatment, which should be approximately thirty minutes.

The solution is then filtered while hot on a 5.5 cm. No. 40 Whatman filter paper in a Büchner funnel and washed with 250 cc. of hot water. The paper fiber and the filtre paper are then transferred to a 250 cc. beaker and 25 cc. of the molybdate solution added. After standing for a short time 25 cc. of water is added and the mixture stirred so as to tear up the filter paper. The solution is then filtered as before and washed with about 200 cc. of cold water. This washing must be done thoroughly so as to remove all of the blue molybdinum color.

The blue solution is now titrated with the standard permanganate solution until a permanent pink is obtained. The titration can be carried out accurately without danger of adding an excess of permanganate since the blue solution changes to colorless just before it goes to pink and thus gives a definite warning of the approaching end point.

NEW YORK CITY NEWS

Secretary R. S. Kellogg announces that the fall meeting of the News Print Service Bureau will be held in New York on October 19 and 20. On Tuesday, October 19, a meeting of cost accountants and engineers to discuss technical matters will be held at the Canadian Club in the Hotel Belmont, while on the following day a general meeting of executives will take place in the Hotel Commodore.

Butler Changes in New York

John R. Robinson, organization manager for the Butler paper interests of Chicago, has just returned to that city after spending ten months in New York effecting various changes in the Butler activities in the East. Almost an entire new lineup has been placed in charge of the Butler interests in New York during Mr. Robinson's stay in this city. His last move was the consolidation of all Butler interests under one roof.

In the past, the central buying organization of the Butler Paper Corporations had its eastern office at 522 Fifth avenue, being housed with the Butler American Paper Company, the export division of the widespread Butler activities. The Butler Paper Company, Inc., of New York, the local distributing house for Butler papers, is located at 261-275 Eleventh avenue, and it is to this office that the other two departments have been moved. Henceforth all three companies should be addressed at the Eleventh avenue address, which is on the corner of Twenty-seventh street, New York.

Green, Low & Dolge, Inc., paper merchants of 50 East Eleventh street, New York, have leased 40,000 square feet of floor space in the building now being constructed on the northwest corner of Varick and Charlton streets, and on or

"Eliminate Time Losses and Reduce Belt Trouble"

By using Standard Self Aligning Belt Fasteners Special Rust Proof No. 66 for 6 to 8 ply Transmission or Conveyor Belts any width.

You can't go wrong.

Self Aligning hold the plate firm and square on the belt while rivets are being driven.

It is not necessary to use a rivet holder. Nibs in the rivet hole align the rivet lengthwise of belt, the right way.

Self Aligning No. 66 are rust proof, and last indefinitely in wet or damp places, and you don't throw them away every time you take up a belt.

You need not turn your heavy wide Transmission or Conveyor belt over to clinch. Rivets may be clinched by driving against a block of metal on the underside of belt.

Send for sample fastener for comparison with what you are now using. Made for 3 to 8-ply belts.

Manufactured by

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UPSON WORKS
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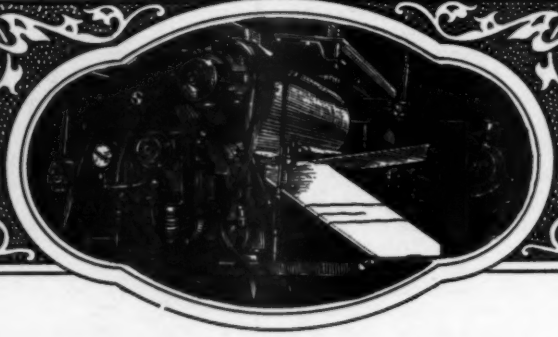

It's the Experience Built into Them That Counts

There are two paper machines running side by side. To all outside appearances both are alike, both run at the same speed, and both produce the same type of paper.

Yet, one of those machines will require a felt of different specifications than the other—a few more threads to the inch, a little difference in the mixture of the wool, or even an altogether different type of felt. And it's only a felt man who will know it.

Hamilton Felts are marked by two blue lines full width of the felt and by one shorter blue line midway between them.

Felts are a problem which cannot be solved by any rule of thumb. They must be worked out individually, not alone for each mill, but for each paper machine. Their ultimate satisfaction depends upon the ability and experience built into them.

In back of Hamilton Felts are more than three generations of felt making experience. This experience assures you of felts that combine maximum toughness with maximum water removal; that save steam because they deliver a drier sheet to the dryers; and that save down time and broke because they require less washing.

In a word, this experience assures you of felts that decrease your cost per pound of making paper.

It's to your own advantage to try Hamilton Felts.

There's a Hamilton Felt to meet every requirement. The Hamilton Felt Man who calls on you is a practical felt man. He knows felts and can recommend one which will meet your conditions ideally.

SHULER & BENNINGHOFEN, Hamilton, Ohio

THE MIAMI WOOLEN MILLS **Founded 1858**

Hamilton Felts

about November 1 will remove to their new quarters. The lease involves the basement, ground floor and first floor, and runs for 19 years at an annual rental of about $30,000. The new location is in the heart of a district wherein a good many paper concerns are housed, and is readily accessible to many transit lines and fairly near to the waterfront. The new quarters will afford the company considerably more room than it now occupies and will enable it to carry a larger stock of the well-known mill brands of paper it distributes.

David L. Maxwell, for many years connected with the Tissue Company in Saugerties, N. Y., as treasurer and general manager, has decided to locate in California as Pacific Coast representative of that company. He will, however, retain his office as treasurer of the company. In view of the fact that Mr. Maxwell has had 10 years' experience at the mill, he will be very conversant with the high-grade products of the Tissue Company, which are coarse and silk crepe paper, creped and embossed napkins. He will make a pilgrimage back to his native town each year in order to keep in close touch with his mill.

The Pawtucket Glazed Paper Company, of Pawtucket, R. I., has established a sales office in New York at 77 Duane street, with H. E. A. Linton, vice-president of the company, in charge.

The E. J. Keller Company, Inc., of 200 Fifth avenue, New York, announces that it has been appointed sole selling agent in the United States and Canada for the well-known brand of wood pulps produced by Rosenberger & Zilina, of Bratislave, Czechoslovakia.

Walter G. Sill, president of the Sill Paper Company, of New York, was married on September 9 to Mrs. Mary Robinson Creighton, of Pittsburgh, the wedding taking place in the Church of the Transfiguration in New York. The ceremony was performed by the Rev. Dr. Albert H. Ashley, of Rutland, Vt., a classmate of Mr. Sill in the Princeton class of '04. Mr. Sill and his bride sailed on their wedding night aboard the steamer Olympic for a several months' honeymoon in Europe.

The firm of William Steck & Co., dealers in and importers of paper manufacturers' supplies of 15 Park Row, New York, has been incorporated under New York State laws with a capital stock of $100,000. The incorporators were William and V. Steck and John H. Engelke.

Emanuel Salomon, widely known in the paper mill supplies trade, is now connected with Gaccione Bros. & Co., Inc., of 31 Peck Slip, New York, as manager of the rag importing department of that concern.

J. George Burns, formerly with the Seaman Paper Company in New York, and Arthur Halperin, formerly with the Urquhart Paper Company, Inc., of 58 Reade street, New York, are now on the selling staff of the Keith Products Company, Inc., of 417 Lafayette street, New York.

International Paper Co. is planning the establishment of a new mill in northern Louisiana for the manufacture of kraft paper, used for wrapping, bags, etc. The company has just purchased 110,000 acres of timberland in that section of the state for raw material. The contemplated mill will have a capacity of 150 tons of paper a day. A location near the company's present kraft mill at Bastrop, La., is being considered.

The Ton-Tex Corporation has been incorporated under the laws of the State of Michigan with a paid-in capital of $50,000. This company will manufacture a thin duck composition belt for both transmission and conveying purposes. The main sales offices and stockrooms will be at 345-351 West 35th St., New York City. Mr. George S. Baker, formerly connected with the Fabreeka Belting Company, is vice-president and general manager.

DAYTON
High Speed Beaters

2—10

Eight months ago the North Star Strawboard Mills, Quincy, Ill., ordered two old Holland type beating engines rebuilt into Dayton High Speed Beaters. The change over was a marked success, as evidenced by an order recently received calling for the reconstruction of ten more Holland engines at the North Star Plant.

When repeat orders follow initial orders, the goods evidently deserve the compliment paid.

Let us tell you the Dayton High Speed story.

Heavier Furnishes
Faster Beating
Greater Output
More Uniform Product
Saving in Product
Saving in Labor

We Rest Our Case on Performance
DB & H
The Dayton Beater & Hoist Co.
Dayton, Ohio

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H. L. KUTTER, Treasurer

P. H. GLATFELTER, Vice-President
ALAN G. GOLDSMITH, Secretary and Assistant Treasurer

PAPER MACHINERY CORPORATION

City National Bank Building
Dayton, Ohio

PAPER Machinery Corporation announces that it has purchased all of the existing patents and patent applications under which deckling without straps on a fourdrinier paper machine is possible. This patent coverage is complete. Any manufacturers who are now infringing through ignorance should take immediate steps to arrange for the continuation of the use of such equipment by corresponding with us.

A JORDAN ENGINE *for* EVERY PURPOSE

Direct Connected Motor Driven Jordans

Six Sizes:—
Baby Jordan
Pony Monarch
Monarch
Mammoth, Jr.
Mammoth
Bull Dog

DURING the past two years, over 80% of our Jordan output has been of the Direct Connected type.

Our Type "D" Jordans are particularly adapted to direct motor drive because of their sturdy construction and the design of our couplings and motor bases permits ample adjustment to insure full wear of Jordan plug and shell knives.

Paper Mill Engineers recognize more fully each day the advantages of Direct Connected units. Greater production and a finer quality of stock can be obtained and, because the speed of a motor is inherently uniform, a maximum quantity of a given grade of stock can be produced. Then, too, through the use of meters, the finishing point of the stock can be accurately indicated and the degree of contact of the Jordan knives can be determined more readily than when the "feel" of the operator alone is relied upon. Because belt pull is eliminated, the undue wear on bearings and eccentric position of the plug, so often found in Belt Driven units, is avoided.

Specifications and Prices Furnished on Request

THE NOBLE & WOOD MACHINE CO. **Hoosick Falls, N. Y.**

For list of our entire products, see page 387 in the 1925 Paper and Pulp Mill Catalogue

WISCONSIN NEWS

Among the important developments in the paper industry in Wisconsin last month was the change of name adopted by the Cellucotton Products Company, of Neenah, manufacturers of the world renowned sanitary product, Kotex. Under an amendment to the articles of incorporation filed in the Secretary of State's office, the company will henceforth be known as the Kotex Company. The company is a subsidiary of the Kimberly-Clark Company, and is at present engaged in building its large addition within two years.

Large boats will henceforth have access to the American Writing Paper Company plant at De Pere, as the result of government work in deepening the channel and deepening of the turning basin at the paper mill this summer.

H. J. Selmer Company, of Green Bay, has been awarded the contract for construction of a large building for the Bates Multiwell Bag Company, of Menominee, Mich. The building will be 240 by 80 feet and will adjoin the Hoskin-Morainville Paper Company plant.

Classes for paper mill workers have been opened in the Vocational Schools of Appleton and other nearby cities in the Fox River Valley as the result of a new policy adopted by the educational authorities here.

In carrying out its refinancing program, the Moloch Foundry and Machine Company, of Kaukauna, manufacturers of paper mill machinery and automatic stokers, has placed an issue of $175,000 in preferred stock on the market. The company has been reorganized and is now capitalized at $375,000. R. M. Kanik is president and general manager, and among the directors are Charles Jacobson, of the Outagamie Paper Company, Kaukauna; L. F. Nelson, general manager of the Badger Tissue Mills, Kaukauna, and H. S. Cooke, of the Patten Paper Company, Appleton.

Wisconsin paper manufacturers interested in the $2,500,000 plant being built for the Longview Fibre Company, at Longview, Wash., are M. A. Wertheimer, Kaukauna, and D. C. Everest, of Wausau.

Superintendents and plant managers of the Victory Bag and Paper Co., Marinette, the Marinette and Menominee Paper Co., of Marinette, and the Falls Manufacturing Company, of Oconto Falls, were entertained recently at a dinner in Oconto Falls. All three are subsidiaries of the Continental Paper and Bag Company, of New York.

Mrs. Ella M. Nash, widow of Thomas E. Nash, founder and president of the Nekoosa Paper Company, of Nekoosa, died several weeks ago. Mr. Nash was one of Wisconsin's pioneer paper manufacturers.

Under a ruling by Judge Fred Beglinger of the circuit court at Oshkosh, the sale of the Island Paper Company, Menasha, which is in the receiver's hands, has been postponed until Oct. 25. It was originally planned to hold the sale on Sept. 25. Officers of the Valley Paper Mills, a new firm of Neenah, have been negotiating on the purchase of the plant. Stockholders have inspected the mill and are reported to be favorably impressed with it.

R. S. Kellogg, secretary of the News Print Service Bureau, and W. G. McNaughton, secretary of the Technical Association of the Pulp and Paper Industry, have been visiting a number of plants in Wisconsin this fall, to check up on the production of paper and pulp.

E. T. Harmon, of Milwaukee, former manager of the Biron Pulp and Paper Company, of Biron, later acquired by the Consolidated Water Power and Paper Company, of Wisconsin Rapids, died at his home in Milwaukee, September 12, following a paralytic stroke. He was instrumental in build-

ALLIGATOR
TRADE MARK REG. U.S. PAT. OFFICE
STEEL BELT LACING
Steel-end your Belts
and use sectional hinge pins & steel
"JUST A HAMMER TO APPLY IT"
BELTS steel-ended with Alligator Steel Belt Lacing and joined with Alligator Sectional Steel Rocker Hinge Pins are exempt from most belting troubles.
This smooth hinged lacing gives long, efficient service on all kinds and sizes of belts. Use Alligator Steel Belt Lacing confidently on your belt drives.
Consultation invited. Sold the world over by the belting, mill supply and hardware trades.
Flexible Steel Lacing Co.
4675 Lexington Street
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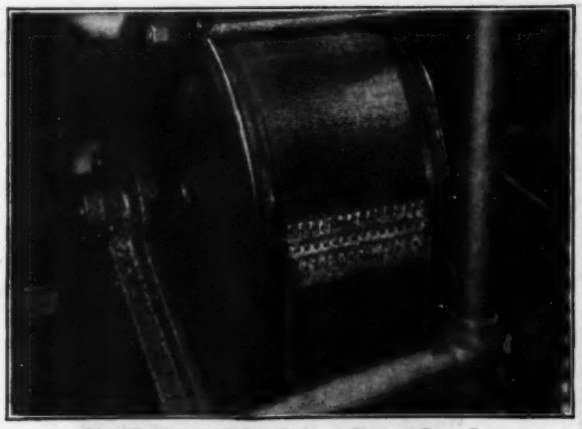
In England at
135 Finsbury Pavement,
London, E. C. 2



Building Higher Standards

As men watch Stanley work out in service it becomes their standard for belting performance. Above is a Stanley on a winder drive (Slip Belt). It required only one take up—an eighth inch per foot after the first week. Does not the widely increasing demand for performance of the quality of Stanley offer a suggestion to you? Write.

Stanley Belting Corporation

320 Broadway, New York
124 Adelaide St., W. Toronto, Ont. — 17 N. Jefferson St., Chicago — 42A Southwark St., S. E. 1. London, England

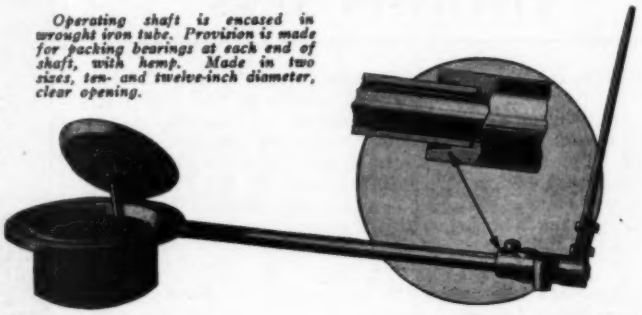
Stanley
Solid Woven Cotton Belting

From the Outside—

No "fishing" and "poking" around the inside of the beater tub. This new dumping valve is constructed to operate **from the outside** of the tub. May be made either right or left hand by simply reversing two small bronze bushings.

Brass valve seat and lid are correctly proportioned. The valve in general is durable, easily operated and installed, and is positive in action.

Operating shaft is encased in wrought iron tube. Provision is made for packing bearings at each end of shaft, with hemp. Made in two sizes, ten- and twelve-inch diameter, clear opening.



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FOR HANDLING BULK MATERIALS

Write for Handbook of Conveyor Practice

ROBINS CONVEYING BELT COMPANY

New York Chicago Pittsburgh Boston

A. George Lutz

Paper Mill Sales Agent

Phone Gramercy 1060

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PRESSURE PIPE THAT NEVER BURSTS
Built in sizes 1 inch to 48 inches

WYCKOFF WOOD PIPE

The Paper Industry is successfully using thousands of feet of this Pipe and they find it to be the best conveyance for White Water, Paper Stock, and Acids that can be obtained

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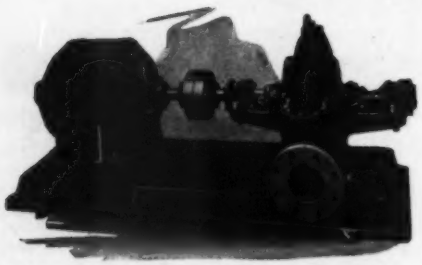
PUMP ABC

By an Engineer

Always Buy Chicago



"Chicago" Type "D" single stage horizontal pump. It is used for House, Booster, Circulating, and Fire duties. Designed to handle any kind of liquid or semi-liquid. Sizes up to 6-inch. Capacities up to 2000 Gallons per Minute. Multi-stage pumps for large capacities and high pressures can also be furnished.

CHICAGO PUMP COMPANY

SEWAGE-CONDENSATION-CIRCULATING
BILGE-FIRE-HOUSE-VACUUM

2318 WOLFRAM ST. CHICAGO

Pickles' Patent Automatic Steam Regulator FOR Paper Making Machines

Which absolutely control the drying of the sheet. Installed on sixty days' trial

W. F. PICKLES **Buckland, Conn.**

GOULDS

INDUSTRIAL—AGRICULTURAL—MUNICIPAL—RESIDENTIAL

A Type for Every Service

GOULDS PUMPS, Incorporated

SENECA FALLS, N. Y.

PUMPS

ing a paper mill at Merrill and was interested in a number of paper mills in Wisconsin and other states.

The Stevens Point Pulp and Paper Company, of Stevens Point, has again begun the sale of paper mill lime refuse to farmers of that locality. About 2,500 cubic yards will be thus sold this fall. This fertilizer is preferred by farmers to lime rock or marl as it has quicker action on soil.

L. A. De Guere, Wisconsin Rapids architect and engineer, has been engaged to take charge of the construction of the $1,500,000 pulp and paper mill of the Turnover Paper Mills Company, at Olympia, Washington. Wrapping paper will be the chief product. A 50-ton Beloit Iron Works machine will be in operation at the start.

Members of the Employees Benefit Association of the mills of the Consolidated Water Power and Paper Company, Wisconsin Rapids, had a banquet in the Hotel Witter of that city, in commemoration of the tenth anniversary of the association, Sept. 23. Mayor George W. Mead, who is also president of the company, and officers of the association, were among the speakers.

The Stevens Point Country Club golf course has been named the Whiting Country Club in appreciation for the generosity of the Whiting-Plover Paper Company, who through George A. Whiting, the principal owner, donated $5,000 to the golf club. Mr. Whiting also has a hotel named for him at Stevens Point, and the new athletic field of Lawrence College, Appleton, of which he is a trustee, has been named in his honor because of his donations to that institution. Mr. Whiting has recently been confined to St. Luke's hospital at Chicago by illness.

Through the efforts of Arthur McArthur, director of educational welfare work of Kimberly-Clark Company, Neenah, that concern has built up a library of 700 bound volumes dealing with paper making, besides indexing 29,000 references on the subject.

The Fox River Paper Company, of Appleton, Wis., is constructing an addition to its main office building. The property is also being beautified by the new concrete drive and the ornamental lights alongside it. Three new 15-inch water wheels purchased from the Leffel Company, of Springfield, Iowa, are also being installed in one of the mills, and a suction couch roll is being placed on one of the paper machines.

Fifty years in business was recently celebrated by Otto P. Schlafer, of Appleton, jobber of paper mill supplies and accessories. This business is carried on as an adjunct to his large hardware store here.

Joseph Marchant, an employee of the Hoberg Paper and Fibre Company, of Green Bay, was painfully injured recently when he was burned on the hand and foot through a short circuit of an electric switch.

Information regarding the suitability of the Fox. River Valley in Wisconsin for the manufacture of paper and feed products is sought from the Appleton Chamber of Commerce by the Southern Immigration and Industrial Association, which, according to its letter to the chamber, is expecting to organize an industry of this nature somewhere in this state. It is seeking a tract of land of about 40,000 acres well adapted to the growing of corn. It proposes to colonize a large number of families who can be employed in agriculture in the summer and in paper manufacturing and feed products in the winter.

The Dells Paper and Pulp Company, of Eau Claire, Wis., has placed an order with Swedish interests for 100,000 tons of paper pulp. It will be loaded on ships in that country and transported by boat through the Great Lakes to Milwaukee.

Austin E. Cofrin, executive head of the Fort Howard Paper Company, Green Bay, Wis., has been elected president of the Green Bay Association of Commerce.

What's all this hullaballo about mechanical efficiency? It's possible for engineers to see superiority in design and to determine wearing ability by a check on materials used in a Speed Transformer. But the best test for everyone is a comparison of actual service.

Study the Ganschow Speed Transformer Catalogue 111. Then ask for an installation near you so that you can see one at work. Or better still, let us show you an installation similar to the one you anticipate. You can make a complete survey of your own as to length of operation, maintenance, power required, space per horse power, etc. We feel positive that your figures on the service cost per unit of Ganschow Speed Transformers will be the lowest you can obtain.

Ganschow Type "B" Angle Drive Speed Transformer driving paper mill roll at world's largest rubber factory — Akron.

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Plants CHICAGO and PEORIA

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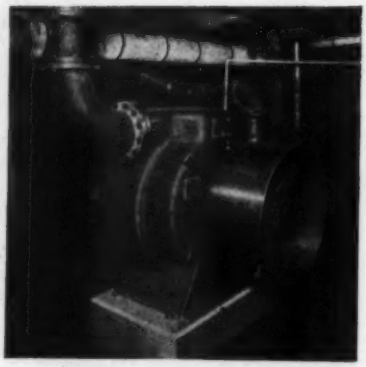
SPEED TRANSFORMERS
CUT GEARS · FABROIL NOISELESS PINIONS

Vacuum constant throughout years of service



No. 7 Nash Hytor Vacuum Pump, arranged for belt drive, used in connection with suction couch roll on paper machine at Eastern Mfg. Co., South Brewer, Me. This is one of many Hytors operated by this mill.

This is the reason—there is no metal-to-metal contact in a Nash Hytor Vacuum Pump that can cause wear and a diminution in vacuum. High efficiency is constantly maintained throughout years of continuous service.

Together with the remarkably low operating cost which characterizes all Hytors, this advantage makes Nash Pumps the preferred equipment for removing water and air from flat boxes, suction rolls, dryers, and similar paper mill machinery.

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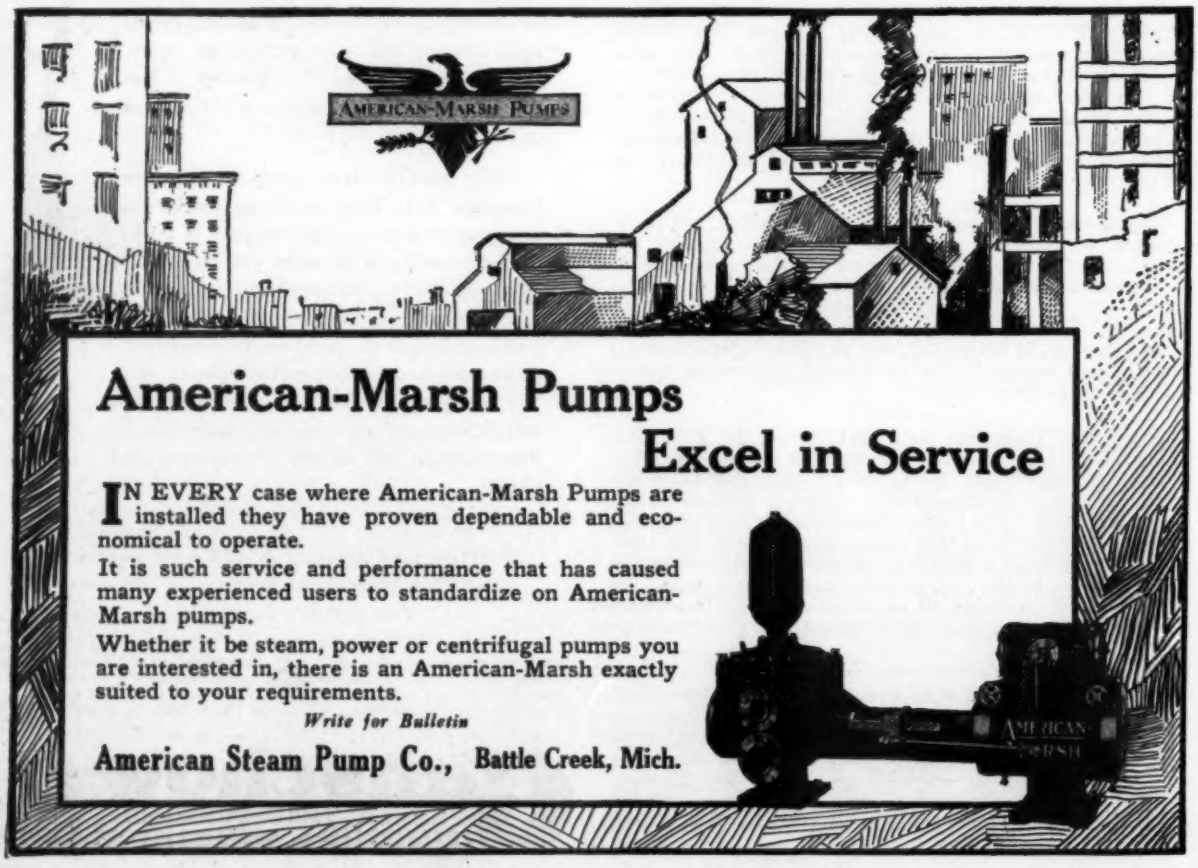
Nash Hytor

VACUUM PUMPS AND COMPRESSORS



American-Marsh Pumps Excel in Service

IN EVERY case where American-Marsh Pumps are installed they have proven dependable and economical to operate.

It is such service and performance that has caused many experienced users to standardize on American-Marsh pumps.

Whether it be steam, power or centrifugal pumps you are interested in, there is an American-Marsh exactly suited to your requirements.

Write for Bulletin

American Steam Pump Co., Battle Creek, Mich.

NEW ENGLAND NEWS

Increasing Power Plant Efficiency

In a recent survey of industrial conditions in New England, the New England Council—a group of the largest business interests—declared that it is a settled conviction in the Middle West that New England manufacturers are traditionally and habitually old fashioned. The Middle West, which is New England's most important competitor on many articles, and paper among them, have the idea that New England mill men are constitutionally unable to progress. We of New England do not believe this to be the case and contend that the paper industry offers as good an illustration as any of the energy and farsightedness of the average manufacturer in this section.

Realizing that one of our greatest handicaps is the high cost of power due to the distance from the enemies, New England paper mills are among the foremost of any industry in this section in the installation of the most modern types of power producing machines, such as stokers and powdered coal burning equipment. Both methods have their adherents, but at present most reports indicate that the powdered coal burning method has the greatest number of adherents among the New England paper mills.

Latest news on this phase of the industry indicates that the Nashua River Paper Co., at East Pepperell, Mass., has installed a second boiler equipped with a Fuller Bonnot powdered coal burning system. The first boiler was equipped with that system last November and has proven a decided success, not only in efficiency of the boiler and the economy of coal consumption, but in ease of operation and cleanliness achieved by the elimination of coal. The new installation includes a dryer to increase its efficiency. The first boiler has operated well without one, even when coal was taken from rain-soaked storage, but it was found that even better results could be obtained with the use of the dryer.

Two mills of the International Paper Co. in New England have also installed powdered coal equipment during the past summer, the Glen mill at Berlin, N. H., and mill at Wilder, Vt. The big mill at Livermore Falls, Me., is reported to be next on the program of the international plan of increasing power plant efficiency.

The Cushnoc Paper Corporation, Augusta, Me., which has been reorganized and merged with the Kennebec Paper Co., plans to spend $500,000 for new equipment, and part of this will go for powdered coal burning equipment. This company has transferred over $1,000,000 of stock to its creditors for claims. The American Writing Paper Co. at Holyoke, also plans an installation of this type and several more are now under consideration.

Bird & Son, Inc., of East Walpole, Mass., have found the stoker system most satisfactory and have equipped their main boiler plant with stokers. They have also installed new turbo generators and generally modernized their power plant.

One thing is certain, modern power plant practice in New England frowns on the use of fuel oil and several plants have definitely turned from oil to coal, one of the most prominent being the Androscoggin Pulp Co., at South Windham, Me., while the Tidewater Paper Board Co., at Norwich, Conn., plans to do so at the most favorable opportunity.

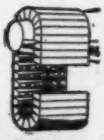
A Precedent on Pollution

The question of stream pollution is constantly arising in many parts of the country and a case in point has been pending for the last eight months in the Federal District Court at Boston, involving the Collins Mfg. Co., of North Wilbraham, Mass., and the Wickwire Spencer Steel Corp., of Palmer, and other points. The latter is alleged by the paper company to be polluting a tributary of the Chicopee River from which the Collins Mfg. Co. draws its process water. This pollution is in the form of drainage and ferrous wastes from the mill. Obviously this matter in large quantities is a serious matter to a paper mill. The case has dragged along and the latest move of the steel company was a motion to

Opening the Lap to Full Width

This is economical

There is more than one way of buying the things you need for your plant. Standardize on Duxbak Leather Belting and you can save enough to buy a much needed piece of equipment. Let us tell you about some paper mill drives where Duxbak is saving money. If you use leather belts send for our free booklet, "There's Money in This for You." It tells you how to repair belts and to make them endless.



Schieren All-Leather Transformer Belts

The tapered blocks on Schieren All-Leather Transformers or speed change belts do not warp, crack or split because they are made of the best leather. That's why they last much longer than belts made with wooden blocks.

DUXBAK BELTING

Chas. A. Schieren Company

Tanners
Belt Manufacturers
37 Ferry Street, New York

"SCHIEREN BELTS DO LAST LONGER"

Morey Paper Mill Supply Co.

Vulcan TRADE MARK

99 CHAUNCY St. BOSTON, MASS.

SOLE SELLING AGENTS

Vulcan TRADE MARK

Double Enameled Fourdrinier Aprons

ACID, WATER and CRACK PROOF

Particularly adapted for use with Voight Inlet **Careful, Intelligent, Quick Service**

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In paper, 248 pages. $3 per copy

CHEMICAL PULP
- Chemistry in the Soda Pulp Process
- Economy of Lime Reburning
- Evaporator Test Code for Soda Mills
- Preliminary Impregnation of Wood
- Strength Test for Chemical Pulp
- Sulphite Waste Liquor as Fuel
- Use of Decayed Wood for Bleached Chemical Pulp

MECHANICAL OPERATION
- Alexander Electric Paper Drier
- Burning of Wood Refuse
- Moisture Meter and Its Use in Water Removal
- Ruths' Steam Accumulator
- Steam Prime Movers for Paper Mills
- Ventilation of Paper Machine Rooms

MECHANICAL PULP
- Norton's Segmental Pulpstone
- Refiners for Groundwood Tailings

PAPER TESTING
- Bureau of Standards and the Weller Brittleness Test
- Extractor and Cleaner for Carbon Paper
- Pulp Weight Factors for Microscopical Analysis
- Relation of Paper Furnish to Paper Tests
- Stains for Microscopical Analysis
- Study of the Mullen Tester
- Test for the Liquid Permeability of Paper
- Tests at Various Relative Humidities
- Use of the Glarimeter for Paper Finish

WASTE
- Burning of Wood Refuse
- Economy of Lime Reburning
- Uses of Carbon Recovered from Black Ash
- White Water and Stream Pollution
- White Water Utilization Code

MISCELLANEOUS
- Barrta Paper
- Bibliography of Paper Making for 1924
- Effect of Acetic Acid on Animal Glue
- Notes on China Clay
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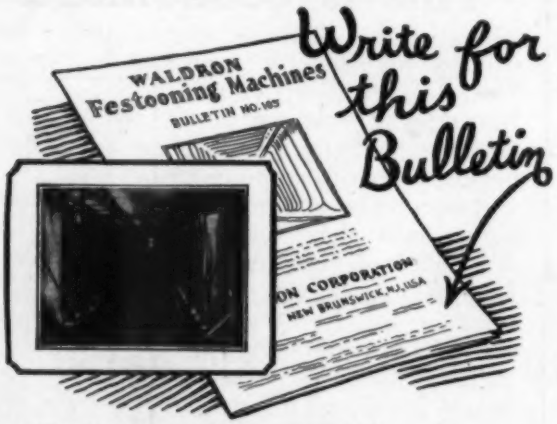
- Standard Method for Testing Bags
- Testing Aniline Dyes
- Tendick's Rosin Size Color Test

Write to THE PAPER INDUSTRY, 356 Monadnock Bldg., Chicago, Ill.



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An authoritative treatise on Principle, Practice and modern methods of air drying by Mechanical Festooning of Paper, Fabrics and practically all other classes of goods that are treated by saturating and coating. Valuable information for executives interested in cutting costs of labor, time and space. Write to our nearest office for a copy. No obligation.

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New Brunswick, N. J.

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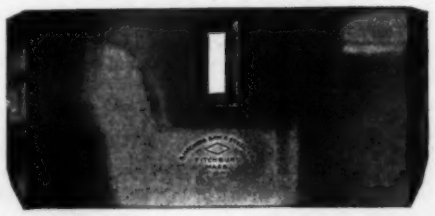
SIMONDS

Barker and Chipper KNIVES



Tough steel of edge-holding quality, backed by expert workmanship, makes Simonds Knives the most serviceable for pulp and paper mills.

Write for Catalog and Prices

See page 303 in the 1926 Paper and Pulp Mill Catalog

Simonds Saw and Steel Co.

Established 1832 FITCHBURG, MASS.

Boston, Mass. Chicago, Ill.

dismiss on the ground that the situation demanded treatment in law rather than equity; in other words, that suit for damages but not for damages with injunction. Judge Brewster, after receiving several briefs from opposing attorneys, gave careful consideration and in his refusal to dismiss uttered some striking statements which may serve as a precedent throughout the country in similar cases, inasmuch as legal decisions in Massachusetts, both Federal and State, have for years been regarded highly throughout the United States and Canada.

The steel company contended that injunction relief for the plaintiff would so interfere with the operations of the mills at Palmer and Clinton that closings would be inevitable. They further contended that the difficulties to the Collins Mfg. Co. could be remedied by moderate expense by the installation of certain machinery.

In his opinion denying the dismissal, however, Judge Brewster says: "We regard it as settled that no riparian proprietor has the right to use the waters of natural streams for such purposes or in such manner as will materially corrupt it to the substantial injury of a lower proprietor, or to cast or discharge into it noxious and deleterious substances which will tend to defile the water and make it unfit for use." Judge Brewster adds that he is unable to rule as a matter o' law that the defendant's use of the water was a reasonable one. The wrong being continuous, equity will grant relief by injunction. No paramount riparian right has been shown. Judge Brewster suggests to the defendant that it ask the plaintiff for a more definite statement of damages. The common law has granted riparian rights which cannot be abridged but also cannot be abused.

Traffic News

The difference between doing business with American, particularly New England, railways and Canadian lines operating in the United States was recently brought out in several incidents, that glaringly indicated the "penny wise, pound foolish" attitude of so many of our carriers. The Canadian Pacific Railroad secured a lease to a long stretch of the Boston & Maine R. R. The Ryegate Paper Co., of East Ryegate, Vt., had before the I. C. C. a complaint against an unreasonable rate on pulpwood from Quebec points to East Ryegate. They desired a reduction of about 4c per 100 pounds or 80c per ton, involving a new rate of 14½c. The B. & M. refused to consider the plea of the New England Paper & Pulp Traffic Association but under the new management it took C. L. Whittemore, traffic manager of the association, just about 15 minutes to convince the C. P. of the reasonableness of his case and the complaint has been withdrawn. The new tariff is effective October 15th.

Similarly, the Grand Trunk will undoubtedly concede a reduction of 50c per ton on woodpulp imported from Portland to a mill on its lines without the necessity of filing a complaint before the I. C. C. and the attendant expense of hearings, etc. The reduction proposed will save the mill in question around $10,000 annually.

Contrasted to these voluntary actions, we find the Boston & Maine and Maine Central refusing to reduce a rate on salt cake from Boston to a Maine mill though the reasonableness of the complaint is obvious. The present rate is sixth class, whereas salt cake loads around 75,000 pounds per car is a low cost commodity and sixth class rates apply on finished printing paper and 90 per cent of sixth on newsprint. The situation means a complaint to the I. C. C.

Waste paper dealers in Boston plan to file formal complaints against existing rates on waste paper from New England to middle western mills.

The Liberty Paper Co., of Bellows Falls, Vt., manufacturers of waxing paper and specialties, have become members of the New England Paper & Pulp Traffic Association, which now numbers 27 mills.

New Brown Alpha Mill

Brown & Co. expect to have in operation at Berlin, N. H., by the middle of this month, a new 200 ton Alpha fibre mill. Notices to that effect have been received by customers of the com-

Pioneers in Paper Making

BELIEVING it will interest our friends to know something of the pioneer paper makers of America, brief notes of the earliest paper mills in different parts of the country will be recorded below from month to month.

Connecticut's First Paper Mill

The first paper mill in Connecticut was erected at Norwich about 1766 by Christopher Leffingwell. It started as a small establishment employing about a dozen hands, and is said to have made printing, writing, cartridge and sheathing papers.

Finding difficulty in making a financial success, Leffingwell asked for a government subsidy, and in 1769 the General Court recognizing the value of this infant industry, granted him an annual bounty of "two pence the quire on all good writing paper and one penny the quire on all printing and coarser paper." Evidently with this assistance the mill was placed on a paying basis, for the bounty was withdrawn in 1772, while the mill continued in existence far into the succeeding century.

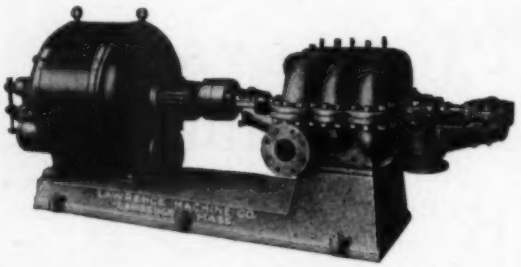
Established 1842

Cheney Bigelow Wire Works

Experienced and Progressive

Fourdrinier and Cylinder Wires
Dandy Rolls and Cylinder Moulds
made and recovered

SPRINGFIELD, MASSACHUSETTS



LAWRENCE multi-stage high pressure pumps for boiler feed and water supply service, to meet all conditions where reliability and economical operation are an essential factor.

Our many years of experience designing and building pumps backed up by unlimited capital and modern facilities places us in the front rank as pump builders.

Some of our competitors try to imitate, but none can equal.

Write the Lawrence Machine Co., for complete details and prices. Free engineering service.

Lawrence Machine Company

Office and Works, 361 Market St.
Lawrence, Mass.

Manufacturer of "Lawrence" Pump, Centrifugal Pumping Machinery, Vertical Steam Engines, Contractors for Special Machinery

"Tide Water at the Power Show"

THE Fifth National Exposition of Power and Mechanical Engineering Equipment is to be held at the Grand Central Palace, New York, December 6th to 11th, 1926.

You are cordially invited to make the Tide Water booth your headquarters at this Exposition.

Make note of this location—Booth 15A, first floor, 46th Street side—and be sure to visit us. * * * *

The Tide Water Power Group
—for paper mill lubrication

TYCOL GEAR COMPOUND
A soft, semi-fibrous grease for enclosed gears under heavy pressure.

TYCOL MEDIUM YARN GREASE
For beater bearings where high temperatures, heavy pressures and water are present.

TYCOL YARN GREASE
For dryer and other bearings operating at high temperatures.

TYCOL LUBRICANT NO. 1
A medium hard grease for Jordans, grease lubricated calender rolls, and for general use.

TYCOL GREASE
A hard grease for replenishing Tycol Yarn Grease.

TYCOL GEAR COATING SOFT
A viscous lubricant especially recommended for use on slow-moving open gears.

TIDE WATER OIL SALES CORPORATION
11 BROADWAY NEW YORK

THE WATERBURY FELT CO.
SKANEATELES FALLS
New York

FELTS and JACKETS

Top and Bottom Wet Felts for board machines, with all the qualities requisite to insure long life and continuous production.

They Satisfy

Our Deep Cushion Resilient Type Rubber Rolls
Are Springy but Not Plastic
They Are Built Like a Tire

Made by

STOWE & WOODWARD COMPANY

The Rubber Roll Makers NEWTON UPPER FALLS, MASS.

pany. Incidentally it is reported that these producers have been forced to turn down orders on the Alpha fibre and their present capacity has been inadequate to care for the growing demand for the fibre. They advise the placing of contracts based on the new output capacity as of December 1st when they expect to have the mills operating smoothly. Due to increased costs they have advanced the price of the Alpha fibre from 5.50c to 6c per pound.

William Whitcomb, vice-president of the Great Northern Paper Co., returned with his family on the S. S. Scythia from a trip abroad during September.

Andrew Jackson, for the past several years mechanical engineer at the American Writing Paper Co., has been appointed acting chief engineer to succeed Herman R. Harrington who resigned on September 1st. Mr. Jackson has been associated with Pusey & Jones, of Wilmington, Del., and with the Dupont Co. William G. Russell, chief draftsman, has been named Mr. Jackson's chief assistant.

R. Franklin McElwain, vice-president of Crocker McElwain Co., and the Chemical Paper Mfg. Co., of Holyoke, was married recently to Miss Rosamond Read who has been employed in the offices of the Associate Mills.

A. W. Esleeck

One of the leading paper makers of the Western Massachusetts fine paper district has died, Augustine W. Esleeck, president of the Esleeck Mfg. Co. of Turners Falls, Mass. Mr. Esleeck was 78 years of age and had been in failing health for some time. He was born in Texas and became interested in the paper industry in 1871 when he was employed as book keeper by the Valley Paper Co., of Holyoke, of which he later became president. In 1888, he was associated with the Beebe-Holbrooke Paper Co., as treasurer, and later organized the Nonotuck Paper Co. which was sold to the American Writing Paper Co. In 1906 he moved to Greenfield near where at Turners Falls he founded his last and greatest enterprise, the concern that bears his name. A property built on one of the most splendidly solid foundations in the entire industry appealed immediately to Mr. Esleeck's knowledge and he secured control. Through his active interest, it has become one of the world's leaders in the field of fine thin papers. The foundation on which it is built is a contributing factor to the mill's success as a base of this strength is needed in this division of the industry.

Mr. Esleeck's first wife died from poisoning received from a dog bite and one of his daughters passed away during the period of his change from Holyoke to Greenfield. He recently married again and had spent much of his time at Daytona, Florida, where he owned a beautiful estate. His nephew, Erving Esleeck, has taken over the responsibility of the Company during recent years.

Besides his nephew and widow he is survived by a daughter.

Direct Mail Advertising Convention

What will undoubtedly be the greatest sales and merchandising event of the year takes place in Detroit at the Ninth Annual Direct Mail Advertising Convention and Exposition at the New Masonic Temple, October 20-21-22, 1926.

Two huge advertising expositions, comprising the greatest and most elaborate in the field today, will open at the New Masonic Temple. Convention headquarters are at 911 Polk Directory Building, Detroit.

Official announcement has been made of the change of the Wayne Tank and Pump Co., Fort Wayne, Indiana, to Wayne Company. Permission for the change was granted for the reason that the old name is no longer descriptive of all the products manufactured by the company.

Mr. R. C. Brower has recently been appointed as general manager of the Timken Roller Bearing Service and Sales Co. He will make his headquarters at the main plant of the Timken Roller Bearing Co., Canton, Ohio.

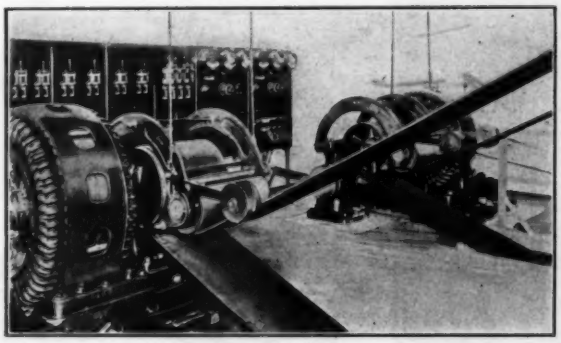
In **1913,** a Lenix user said:

"The Lenix Drive, which you supplied me with, is not alone worth the money you charge for it but is worth a great deal more. In the first place it is worth a whole lot to know that a belt driven over a Lenix Drive will deliver all the power any engine gives it and without straining the belt.

"I am running two of your Lenix Drives three years and never had a penny's worth of trouble."

In **1926,** the reply to our questionnaire is that the same drives are

"VERY SATISFACTORY"



Two 225 H. P. Generators Equipped with Lenix Drives

These Lenix Drives have been in daily service since January, 1911. Their low cost of upkeep is evidenced by the fact that the only repairs necessary in 15 years of service were the renewal of bearing bushings in 1923.

During the past year no fewer than TEN mills were added to the list of paper factories in the United States and Canada using the Lenix drive. The total number is now over SEVENTY. Our experience in handling belt drive problems is at your disposal. Why not take advantage of it?

Send for Catalog

See our exhibit in the Fifth National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York, December 6th to 11th, 1926.

F. L. Smidth & Co., Inc.

Engineers

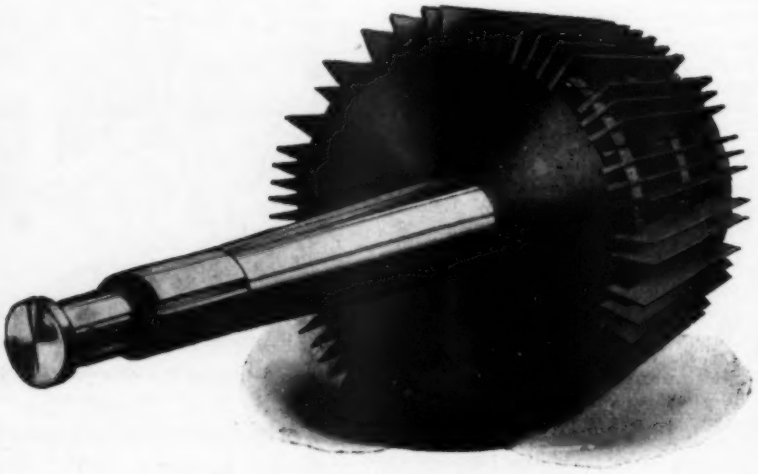
50 Church St., New York, N. Y.

THE LENIX DRIVE

(Trademark Reg.)

Send Us Your Old Beater Rolls

Mills frequently send us their old rolls of the banded or bandless type, made by other manufacturers, to be rebuilt into our type of Bandless Beater Roll. They would not do this, unless they had some mighty good reasons.



Downingtown Bandless Beater Rolls have crucible steel heads and milled dovetail slots to hold the flybars,—the flybars having dovetail lugs to fill the slots, milled to a perfect fit. Compare this with keys, wedges, bolts and nuts, bands, fusible metals, etc., used to secure flybars in other rolls and you will learn why many concerns are sending us their old rolls.

Why not change your old-fashioned rolls to our Bandless Type and be assured of full wear from flybars? Send us one of your old rolls and note the result.

Catalog on Request

DOWNINGTOWN MANUFACTURING COMPANY
Paper and Pulp Mill Machinery
EAST DOWNINGTOWN, PA., U.S.A.

PACIFIC COAST NEWS

Zellerbach Interests to Erect New Mill

Ground will be broken almost immediately for the first unit of the proposed new box board and paper box manufacturing plant of the National Paper Products Company which will be erected in the Southgate Industrial District of Los Angeles.

The National Paper Products Company is affiliated with the Zellerbach Paper Company, which already operates a number of mills and distributing houses on the Pacific Coast. The new mill, which will occupy a twenty-five acre tract, will cost approximately $1,500,000 and will provide 120,000 square feet of floor space. Of this space 50,000 square feet will be devoted to the manufacture of paper boxes while the remainder will be utilized for the manufacture of corrugated board.

The productive capacity of the proposed mill will be from 75 to 100 tons of box board a day, while it will have an in and out tonnage of approximately twice and a half times that. As soon as the new unit is completed, the paper box manufacturing department of the Zellerbach Paper Company, at present operated under the name of the Renshaw, Jones and Sutton Division, and located at 1231 South San Pedro street, Los Angeles, will be moved to the new plant.

Plan Early Construction of West Coast Mill

The first building of the West Coast Pulp & Paper Company, located at Tumwater, Wash., near Olympia, will be erected in the near future and initial production will start early in 1927, H. S. Gile, secretary and treasurer of the concern, has announced at Olympia.

The building for the first unit is to cost approximately $50,000 exclusive of equipment and a large paper machine for turning out a fine grade of paper will be installed. The West Coast Pulp & Paper Co., has filed an amendment at Olympia, the State Capital, changing the name to Tumwater Paper Mills Co. The concern is capitalized at $1,250,000.

Theodore Osmund, former secretary-treasurer of the Hawley Pulp & Paper Co., of Oregon City, heads the company. W. H. Trendle is vice-president. The first unit is designed to produce from thirty-five to forty tons of paper daily.

The Puget Sound Pulp Manufacturing Company has been incorporated at Tacoma, Wash., for $300,000. The incorporators are Andrew Price, R. H. Miller, U. M. Dickey, William Morrison, P. F. Knight, Ossian Anderson, and Ralph H. Shaffer.

The main structure—all of concrete—of the new plant for the Rainier Pulp & Paper Company, Shelton, Wash., is rising above the first story and other units of the plant have been started. A concrete tower, for acid mixing and elevator to be 111 feet high, is more than half completed and pile driving has been begun for other units of the mills which extend several hundred feet over the bay to be filled by dredging later.

The San Juan Pulp Manufacturing Company's plant in Bellingham, Wash., will begin operating in about six weeks, according to President Ossian Anderson. Practically all the machinery is at hand and installation is being rushed. The company will produce pulp from waste spruce and hemlock from the Blaine and Bellingham plants of the Morrison Mill Company and the Bloedel-Donavan mill.

At Longview, Wash., work is to begin immediately on preparation of the 180 acre site for the new $2,500,000 paper mill to be built by the Longview Fiber Company. When completed, the plant will have a capacity of 100 tons of finished product and 100 tons of pulp daily.

The Pioneer Paper Company, Los Angeles, Calif., has plans in preparation for the erection of a new addition to its

Built by Norwood"

Means "Built to Stand Up"

ALL of the knowledge, skill and experience developed in over thirty years of filter engineering and paper mill machinery manufacturing are combined in the manufacture of Norwood paper mill equipment. Norwood quality and Norwood dependability are inbuilt qualities. You know before you make a purchase that Norwood Filters and Paper Machinery will "stand the gaff." They are built to stand up.

Note These Important Features!

Norwood Filters

Three unit system, making continuous operation possible. All cast iron pipes and connections. Patented separate air wash system and strainer system.
Built to Stand Up!

Norwood Calenders

Continuous oiling system, top and bottom boxes removable without taking cap off calender frame—and many other features for efficient, easy and speedy operation.
Built to Stand Up!

Norwood Platers

All gears machine cut in our own factory; flexible coupling; dial type indicator; back shaft and intermediate shafts babbitted with genuine babbitt; operated with extreme simplicity by hand switch instead of lever.
Built to Stand Up!

It will pay you to write us for full specifications, illustrations and prices on any paper mill equipment in which you are interested.

NORWOOD
ENGINEERING COMPANY
Florence, Mass.

FILTERS—SUPER-CALENDERS—GLASSINE-CALENDERS
PLATERS—DUSTERS—BRUSHING ENGINES

Cable Conveyor handling Pulpwood to mill.
SOME VITAL LINKS
Pulpwood Stackers designed and built to suit various conditions and capacities

Some Vital Links in the Manufacturing Process of the Pulp and Paper Industry

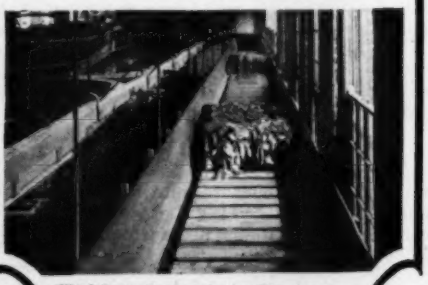
To find the most simple, economical, and effective methods of handling materials in pulp and paper mills—is a goal toward which Jeffrey Engineers have been striving for a half century.

Today—a list of the leading concerns who have profited by the installation of Jeffrey Labor-Saving Equipment to keep pace with the world demands, constitutes a "blue book" of the industry.

Whatever the material to be handled, or the conditions to be met, you can put the problem up to Jeffrey Engineers with the confidence that the equipment recommended will exactly fit the requirements.

Belt Conveyors for handling Pulp Laps, Chips, etc.

Chain Conveyor handling Logs to mill.



Wood Apron Conveyor for handling Bundles of Rags, Paper Rolls, etc.

The Jeffrey Manufacturing Company

944-99 North Fourth St., Columbus, Ohio

New York	Pittsburgh	Cleveland	Milwaukee	Los Angeles
Buffalo	Scranton, Pa.	Charleston, W. Va.	St. Louis	Birmingham
Rochester, N. Y.	Boston	Chicago	Denver	Charlotte, N. C.
Philadelphia	Cincinnati	Detroit	Salt Lake City	Montreal

JEFFREY
MATERIAL HANDLING EQUIPMENT

plant and will ask for bids on the general contract in the very near future. The company plans to build a one-story, brick and steel structure, 60x120 feet, at an estimated expenditure of approximately $45,000. The plans contemplate also the installation of new manufacturing machinery.

Articles of incorporation have been filed in Olympia, Wash., for the Pacific Wood Pulp, Inc. The concern is capitalized for $600,000. The mill will make ground wood pulp and will represent an investment of more than $375,000. The site has not been selected.

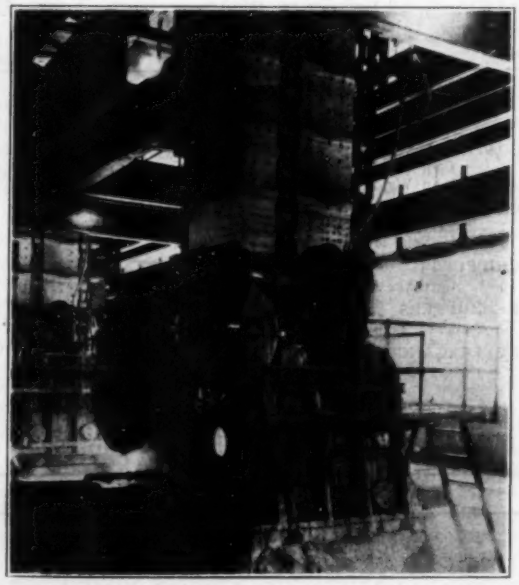
Electrical equipment comprising thirty-two motors will shortly be installed at the Occident Pulp and Paper Mills, at Edmonds, Wash. Fairbanks-Morse Company will install the motors.

Out of twelve new factories started in the state of Washington during August, four were paper mills. Recent figures show the growth in business volume of paper board bills is approximately twenty per cent, for the eight months period just concluded.

The Los Angeles Paper Manufacturing Company, of that city, is building a small addition to its mill which will materially increase its production facilities.

Load Regulation at World's Greatest Paper Mill

The Canadian International Paper Company, Three Rivers, Que., recently doubled its capacity by increasing the number of its paper machines from four to eight and corresponding increases in its other equipment. The enlarged mill con-



tains a number of striking advances in the art of making paper, including an interesting method of regulating the load of the synchronous motors which drive the Warren magazine pulp grinders.

With 39,200 horsepower in synchronous motors operating at once, it is essential that the load be very closely regulated in order not to affect the electric power rates adversely. In the magazine grinder the wood is forced down upon the grindstone by the 3-horsepower motor driving the caterpillar feed chains. (See illustration.) The speed of this motor, and hence the pressure of the wood against the stone, is regulated by the current being supplied to the synchronous motor. Any tendency toward an increase of load on the synchronous motor causes the 3-horsepower feed motor to slow down and thus relieve the pressure.

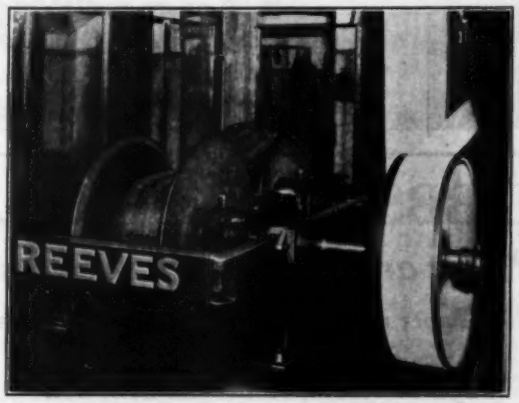


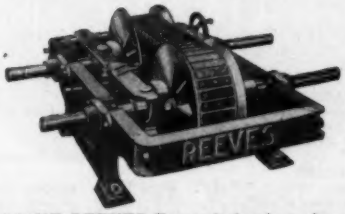
Photo shows a REEVES Transmission which operates a 79-roll loft drier at the Gilbert Paper Co., Menasha, Wis.

Accurate Control for Uniform Production

ANYTHING from tissue to wrapping paper can be made on machines driven by the REEVES Variable Speed Transmission, and each grade of stock will be uniformly high-grade. The REEVES gives the fine, steady, accurate gradations of speed which enables you to run your machinery at just the right speed always for any different weight.

On fourdrinier and cylinder machines, on cutters, winders, slitters, and on pasting machines, the REEVES Transmission will eliminate waste and increase your production efficiency. Our catalog A-66 gives full information about the uses and advantages of the REEVES in the paper industry. Write for it today.

REEVES PULLEY COMPANY
Established 1887
COLUMBUS, INDIANA



THE REEVES Transmission is a simple, compact mechanical device which receives power at a constant speed and delivers it at any speed desired to any machine or group. It will maintain one set speed indefinitely, or may be changed instantly to meet any different operating condition. Accurate and dependable, always.

REEVES
Variable Speed Transmission

GIBBS-BROWER CO.

Paper and Pulp Mill Brokers

Used Paper and Pulp Mill Machinery for the Mill

Paper Merchant, Jobber and Converter

USE OUR "GO BETWEEN" SERVICE

261 Broadway **New York City**
166 West Jackson St. **Chicago, Ill.**

Our Motto, "Service First"

Sulphite Superintendent wanted for modern mill making bleached pulp. Technically educated man with executive experience preferred. Applicants requested to give in first letter references, education and experience in detail and salary earned and expected. Answer Box 106, The Paper Industry.

POSITION WANTED—Superintendent, fifteen years on News, Kraft and Manillas. Now open for position. Would consider night superintendent or day foreman with chance of promotion. Best of references. Write Box 103, Windsor Mills, P. Q.

Paper Mill Machinery Rebuilt

PAPER MACHINES
One 118" Fourdrinier tissue machine.
FOURDRINIER PARTS
Pusey & Jones design. One 126" Moore and White.
CALENDERS
106" nine roll. 72" nine roll. 62" seven roll. 64" seven and nine rolls.
WINDERS
128" Warren. 72" Langston. 96" M. & W. four drum.
MARSHALL DRIVE
Complete Pusey & Jones and Rice Barton & Fales for paper machines.
SHEET CUTTERS
110" Hamblet. 110" Horne. 102" Downingtown Duplex. 70", 54" Moore and White. 60", 52", 48" Hamblet.
REAM CUTTERS
54" undercut. 54" Holyoke Seybold. One 44", one 38" Twentieth Century Seybold.
DRYERS
Nine 48"x118". Twelve 36"x76". Sixteen 36"x66". Eighteen 36"x60". Fifteen 28"x62". Four 36"x48".
LAYBOYS
One 102". Two 72". Three 52" Erie single. Two 60" M. & W.
SUPER CALENDERS
56" seven roll Holyoke. Four 66" Holyoke. One 62", one 60", one 45" Norwood.
SUCTION ROLL
One 104", one 126" Millspaugh with Connersville pumps.
STUFF PUMPS
Six Deane triplex 12"x12". One Deane triplex 9"x8". One Goulds triplex 8"x12".
BEATERS
Two Jones 65"x57". One Holyoke 60"x60". Two Horne 36"x36". One iron tub 40"x42".
JORDANS
One large Horne. Two N. & W Monarch. One Jones standard.
RAG CUTTERS
Taylor Stiles No. 11. One No. 2 Daniels.
WASHER
Jones 65"x57" equipped with four cylinder washers.

One No. 2 Lamson pulper—Variable speed steam engine Erie Ball 12x12x14, Revolvator—Three 72" Sandy Hill wet machines—Two Shredders, Mitts Merrill No. 17—Complete coating mill equipment new in 1921.

For Sale By

FRANK H. DAVIS COMPANY
175 Richdale Avenue, CAMBRIDGE, MASS.

FOR SALE—Four embossing presses, good condition, Krause, Seybold, and Standard, highest stroke 6". Also four Latham Stitchers. Very reasonable. Address Box 108, The Paper Industry.

CHIEF ENGINEER—First-class man to take charge of electric and steam operations in a two-machine paper and 100-ton Sulphite Mill—must be able to get results, handle men, and furnish good references. None but steady, energetic man need apply. Apply Box 101, The Paper Industry.

English Firm Desires Cardboard Specialty

Old established firm of merchants and importers in London, England, wish to get in touch with American manufacturers who specialize in the making of cardboard protectors for Gramophone records. These protectors to be made of a pliable cardboard, buff or brown on the outside, thumb-holed at the top, circles punched out in the center, not stitched at the sides but machine-made and stuck down the center of the back. Quantities required from 100,000 to 500,000.
Further particulars, together with information as to the financial standing of the enquirers can be obtained on application to Box 107, The Paper Industry.

WANTED—Knife Grinder to grind paper cutter knives, 72" long or over. Interstate Machinery Co., Troy, N. Y.

FOR SALE

COATING MACHINES
1—30" John Waldron Corp.
1—36" John Waldron Corp.
CALENDERS
1—34" Textile Mfg. Co. (Friction Type)
1—36" Holyoke Machine Co. (Rewinder)
CHIPPERS
3—88" Carthage Machine Co.
RE-CHIPPERS
1—Standard Lombard-Waterville Iron Works
KOLLERGANGS
5—8'6"x12" Pusey & Jones (Granite)

BOILERS—ENGINES—TANKS—CRANES

F. WILLIAM STOCKER, Hoboken, N. J.

FOR SALE—USED MACHINERY.
2—2,000-lb. Dayton Beaters, nearly new, each equipped with four cylinder washers. Can be used either as beaters or washers.
7—Jones Imperial Jordans, in excellent condition. Above machinery sold either "as is" or brought to our shops and thoroughly reconditioned. Write for particulars. THE NOBLE & WOOD MACHINE CO., Hoosick Falls, N. Y.

Catalogs, Booklets, Etc.

Bethlehem Steel Co., Bethlehem, Pa.—Bethlehem Stainless Steel and Stainless iron are discussed in a new booklet. The booklet describes the composition of these metals and the various uses to which they may be put. It is complete with working instructions and a number of illustrations.

The Bristol Co., Waterbury, Conn.—Catalog No. 1502 has just been issued, covering recording voltmeters. The descriptions are unusually complete, in each case going into the various uses of, and the proper installation and care of each instrument to obtain the best results. The catalog is well illustrated with pictures of the instruments, sectional views, charts, etc.

General Electric Co., Schenectady, N. Y.—A new booklet takes up briefly the trend of many industries toward electric heating. A summary is given of the advantages some seven or eight important industries find in heating with electricity. The booklet contains illustrations of each case. Leaflet GEA-233, covering single-stage centrifugal air compressors, has been received also.

Metropolitan Life Insurance Co., New York City.—Three very instructive and helpful booklets have been recently received. One of these, "Physical Examinations in Industry," discusses the advantages of, the reasons for and the methods of conducting physical examinations of employees, with the end in view of increasing the morale and incidentally the production of a plant. "The Functions of the Treasurer" is the second of the series on Business Organization, which this company is issuing. It discusses in detail the various duties of the treasurer of an organization including both the routine and special or unusual functions. "Industrial Thrift and Savings Plans" is a report on the various forms of thrift and savings plans in use in a number of business houses. The actual experiences which firms have had in conducting these plans are cited. Copies of all three of these booklets may be secured from the Policyholders Service Bureau at the New York office.

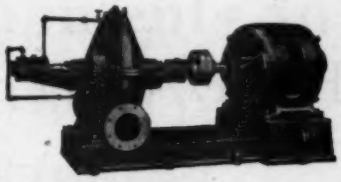
The Terry Steam Turbine Co., Hartford, Conn.—Bulletin No. S-80 has just been issued, devoted entirely to the Terry Multi-Stage Turbines. It describes some of the principles involved in the operation and application of these machines. Descriptions are given covering the various types together with the factors that govern their use. Typical installations are cited and illustrated completely. The booklet is very handsome in appearance and contains a wealth of very valuable information to engineers, maintenance men and others.

Timken Roller Bearing Co., Canton, Ohio.—Results of recent important developments in the use of tapered roller bearings in various types of machine tool equipment are covered in a comprehensive way in an illustrated booklet form of the paper on "Recent Developments in the Application of Tapered Roller Bearings in Machine Tools," presented by Mr. S. M. Weckstein, Industrial Equipment Engineer of the Timken Company, at the Machine Tool Section of the A. S. M. E. held in connection with the New Haven Tool Exposition last month. Reprints may be had by addressing the Industrial Equipment Division of the Timken Roller Bearing Co., Canton, Ohio.

John Waldron Corp., New Brunswick, N. J.—An authoritative treatise on principle, practice and modern methods of air drying by mechanical festooning of paper, fabrics and other classes of goods that are treated by saturating and coating, has recently been issued in booklet form. The booklet contains a great deal of valuable information for executives.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.—Revised leaflets L 3549-B, L 20135-A, and L 20011-A, Covering Type CA carbon circuit-breakers, Types CL and CN carbon circuit-breakers and Types F-11 and F-22 oil circuit-breakers, have been recently released. Leaflet 20292, describing the Type MF motor starting oil circuit-breakers, has also been released. The application, construction and operation of these various types of circuit-breakers are clearly and completely discussed.

Wright Mfg. Co., Lisbon, Ohio.—Catalog No. 11, which has just been released, is a comprehensive hand book on chain hoists, trolleys, hand cranes and allied equipment. It contains not only cuts and general descriptive matter, but also line drawings giving all dimensions and clearances of the various products. The book will be particularly valuable to engineers, architects, superintendents, etc.



High Efficiency Centrifugal Pumps

We build the latest improved types for every pumping requirement in paper and pulp mills.

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Lawrence Pump & Engine Co.
P. O. Box 70B LAWRENCE, MASS.

MAGIC BOILER PRESERVATIVE
"The Pioneer Boiler Treatment"

Positively removes and prevents scale, stops minor leaks, pitting and corrosion

GARRATT-CALLAHAN CO.
310 South Michigan Avenue, Chicago
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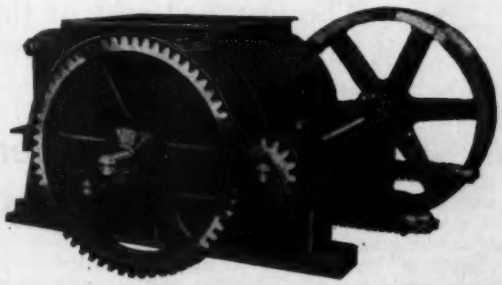
MAGIC ESTABLISHED 1904

One Operation Reduces Mine Run To Stoker Size

with a



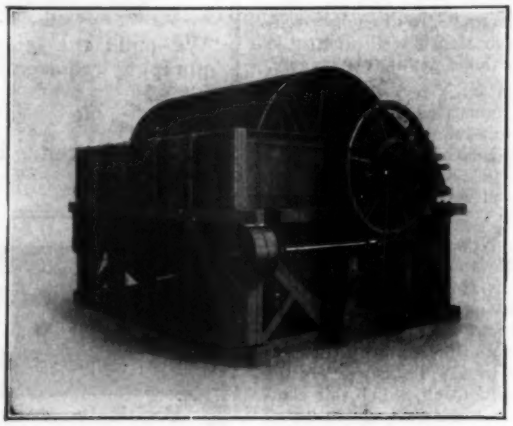
WEBSTER Single Roll COAL CRUSHER

Simple in Design Well Proportioned
Ruggedly Constructed

Send for Catalog No. 44

THE WEBSTER MFG. COMPANY
1856 N. Kostner Avenue CHICAGO

WHITE WATER TO OLIVERS?



Here is one instance of what happens:

5.5 lb. fibre in White Water to Oliver.
0.3 lb. fibre in White Water from Oliver.
5.2 lb. fibre reclaimed by Oliver.
94.5 per cent of fibre reclaimed, amounting to over 2½ lb. per minute, or 2,000 lb. per twenty-four hours.

This in a small mill

The installed cost of this OLIVER will be met by the value of the stock saved in nine months.

Paying for themselves quickly is an Oliver Characteristic

See page 381 in the 1926 Paper and Pulp Mill Catalogue

Oliver Continuous Filter Co.

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802 Cunard Building

New York
1422 Aeolian Building

London
11 Southampton Row

Johannesburg, South Africa
E. L. Bateman, The Corner House

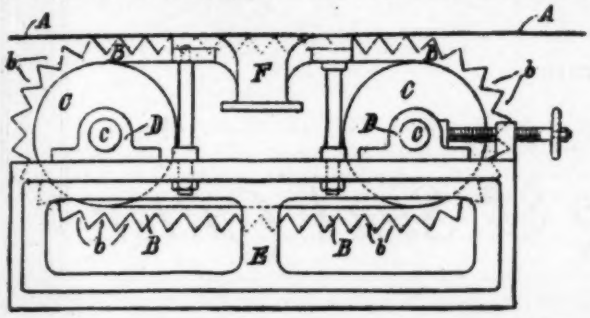
Technical Developments in the Paper Industry

Domestic and Foreign

The following abstracts are of the latest developments found in the foreign press and the domestic and foreign patent offices. Photostats and translations of complete articles and patents can be obtained at cost price.

Suction Box Substitute on Paper Making Machines

FRENCH Patent, No. 607,182, has for its purpose the replacement of the ordinary suction box on the paper making machine or else the supplementing of that device by an arrangement for the purpose of removing the moisture in the



paper moving on the wire to reach the end of the machine in the dry condition.

In accordance with this invention, a belt made of rubber or other suitable material is placed on the metallic wire so that the two travel together over rollers. The belt is channeled perpendicularly to its travel.

The arrangement is shown in the accompanying figure. The metallic wire is shown at (A) and under this there is arranged the traveling belt (B) which is made of rubber or other flexible substance. The perpendicular channels are seen at (b) and the edges of these channels coming in contact with the wire form triangular shaped spaces in which an aspirating action is exerted on the moisture contained in the paper web which is on the wire. The belt (B) runs over rollers (C), which are supported on shafts (c) which turn in the bearings (D). These bearings are supported in a suitable framework (E). The extracted water runs off through the conduit (F).

Chemical Changes in Sulphite Cellulose Boiling

ANALYSES of the liquor and pulp have been made at various stages of technical sulphite cellulose boils, and of laboratory boils controlled so that the temperature at each stage was the same as in the technical boil. The dissolution of incrustating substances begins during the first hour of the boil and reaches an approximately constant velocity when a temperature of 80 to 100 degrees C. is attained. It is therefore desirable to heat to a temperature of 100 degrees C. as rapidly as possible.

Towards the end of the boil the rate of dissolution diminishes. The sulphurous acid and calcium contents of the wood increase independently of the temperature within certain limits and the end point is always reached after the same time. Carbohydrates and lignin pass into solution together until 23.2 per cent of the wood has been dissolved. Lignin then dissolves alone. The carbohydrates dissolved during the first few hours are mostly pentoses, hexoses dissolving later. The ratio of pentoses to hexoses in the hemicellulose is one to two.

It is probable that lignin and carbohydrates are combined in wood as glucoside-like compounds, and that the principal reactions in the sulphite boiling process are the hydrolysis of such compounds and the formation of soluble calcium lignin sulphonates. The compound of lignin with cellulose contains the constituents in the ratio of 1 to 2.5, corresponding to one molecule of lignin (equivalent weight 360) to five glucose residues. The compounds of lignin with hemicellulose contain one molecule of pentose and two molecules of hexose for each molecule of lignin. During boiling the resin and fat are partially removed, but this is mainly due to mechanical action. Ann. Acad. Sci. Fennicae, 1926, volume 26, No. 4.

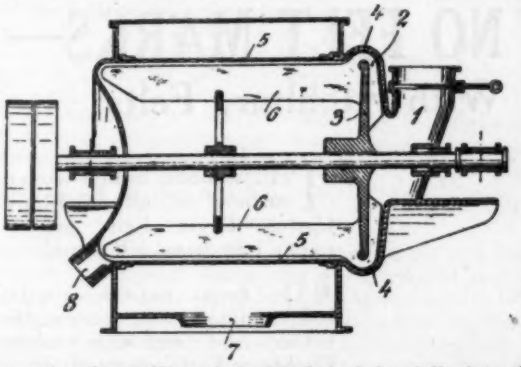
Preparing Cellulose Pulp

IN THE preparation of wood cellulose, the duration of the process is reduced, the color of the product is improved, and the yield is increased by treating the raw material at eight atmospheres pressure and at a temperature not exceeding 110 degrees C. with a highly concentrated aqueous solution of sulphurous acid containing more than one hundred grams of sulphur dioxide per liter. Under these conditions the process is completed within a period of eight to sixteen hours. The digester is preferably first exhausted to remove air from the pores of the wood. The sulphur dioxide uncombined with the wood can be recovered and after purification may be reabsorbed in water for subsequent treatments. British Patent, No. 252,344.

Centrifugal Screen for Mechanical Wood Pulp

THE illustration shows a centrifugal screen which is employed for screening mechanical wood pulp and which is patented in German Patent, No. 431,462.

The screening device is provided with a horizontal cylinder



or screening drum (5) and the stock is fed axially into this drum through the opening (1). A number of blades or scoops rotates within the interior of this drum and a disc is placed on the blade shaft near the inlet opening of the drum. The blades are shown at (6). Pump blades rotate in a portion of the casing, which is of greater diameter, shown at (4), than the diameter of the drum (5). The pump blade is shown at (3). The outlet for the wood pulp is indicated at (8).

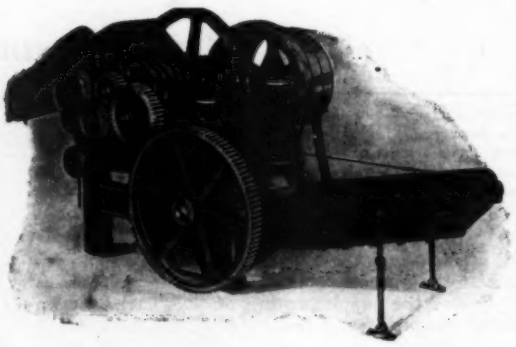
Preliminary Treatment of Wood for Paper Making

THE preliminary treatment of wood and similar materials for the manufacture of paper consists in dividing the steaming process into four successive and separate steps. The first step comprises a slow preparatory heating of the material to be treated up to a pressure of two to four atmospheres, according to the quality of the pulp to be produced. During the second step this pressure is kept approximately constant for about two to four hours and during the third step gradually reduced to atmospheric within three to eight hours by regulating the steam supply. The fourth step consists in the

Special advantages

OF THE PERKINS RAG & STOCK CUTTER:

Large capacity
No waste of stock
Clean shear-cut
Less time in the beaters
Dustless operation
Cuts the stock *both ways*
Minimum power consumption—
Maximum efficiency in operation



WRITE DEPT. M 10, B. F. PERKINS & SON, INC., HOLYOKE, MASS.
MANUFACTURERS

The Perkins Rag & Stock Cutter

PERKINS

NO FELT MARKS—
With Fitchburg Felts

THE smooth, tightly-woven surface of all Fitchburg Cotton Dryer Felts insures paper free from felt marks.

¶ The finest papers—bonds, ledgers, fine writing—are made better and smoother when Fitchburg Felts are used.

¶ Manufactured in English weave, two, three, four, five and six ply, from 60 to 210 inches in width.

¶ Fine faced felts for fine papers. For coarse papers use "Triune" three-ply felts—**they're dependable.**

FITCHBURG DUCK MILLS
ESTABLISHED 1844
54 Duck Mill Road FITCHBURG, MASS.

1864 1926

"Excelsior" Felts

For EVERY GRADE of PULP & PAPER

We continue to maintain at the top the quality of Excelsior Felts, as we have done since we, as pioneers, made *the first endless paper machine felts manufactured in America.*

Seamless felts for fast running.
Satin Style felts for finish.
Special felts to meet every condition.
Send us your felt problems.

KNOX WOOLEN COMPANY
CAMDEN, MAINE

Sold by
BULKLEY, DUNTON & COMPANY
75-77 Duane Street, N. Y.
and direct

admission of water to the boiler, with or without the admixture of chemicals, for the purpose of subjecting the material to constant saturation for a period of four, five and more hours, while the first three stages can be repeated once or several times before such saturation takes place. United States Patent, No. 1,597,718.

Sulphite Liquors and Sulphite Process

IN UNITED STATES Patent, No. 1,599,488, there is described a process and apparatus for obtaining sulphite cooking liquors. The apparatus is shown in Figure 1 and

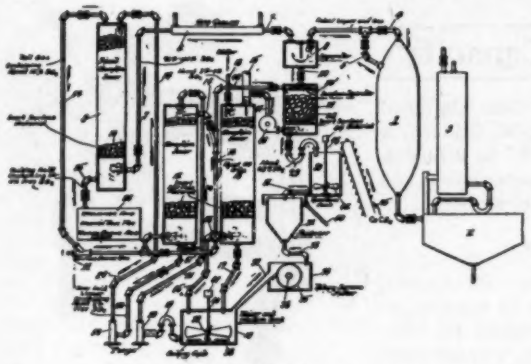


Figure 1

the process consists in the recovery of sulphur from digester relief liquor which contains combined sulphur. The operations consist in precipitating the sulphur constituents in the form of insoluble monosulphite, but without effecting a substantial precipitation of the organic matter. Then the monosulphite is converted into the bisulphite by means of sulphurous acid and this is then recovered and employed as a cooking liquor.

United States Patent, No. 1,599,489, is concerned with the

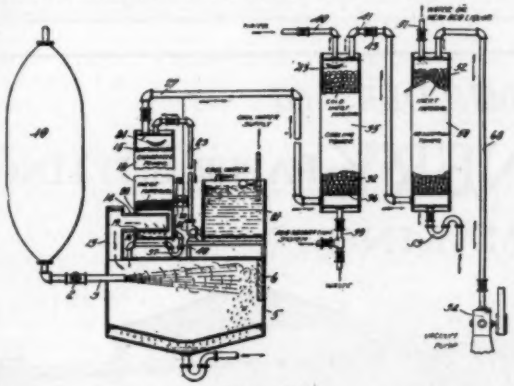


Figure 2

manufacture of a high alpha cellulose fiber from unbleached pulp which comprises pretreating the pulp with an oxidizing liquor and then cooking the pulp in a lime cooking liquor.

United States Patent, No. 1,599,490, describes a process for the recovery of sulphur dioxide from blow pit gases in an apparatus which is shown in Figure 2. The waste gases and steam are passed through a tower in counter current and indirect contact with relatively cold water. This results in the condensation of a portion of the steam and in the partial cooling of the gases. These gases are then further cooled without absorption, and then another portion of the steam is condensed by passing them in contact with relatively cold inert interstitial material.

Antiseptic, Impermeable and Deodorizing Paper

A SPECIAL paper which has antiseptic properties and which is suitable for special wrapping purposes is made in accordance with the process patented in French Patent, No. 607,639.

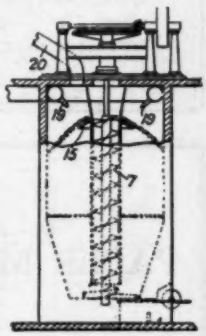
The physical properties of this paper depend on the nature of the pulp that is employed in its manufacture. The novelty of this invention consists in the incorporation of certain substances with this paper that affect its chemical properties. These substances are mixed with the pulp in the beater. The pulp that is commonly used for this purpose is sulphite pulp, prepared with lime bisulphite at a low temperature. The porous paper is converted into a parchmentized paper by treatment with sulphuric acid and pressure and this product possesses the mechanical strength that a paper of this character should have for wrapping purposes.

The invention in question allows the combination of the physical and mechanical properties of the parchmentized paper, or of any other suitable paper, with certain disinfectant properties of such a chemical product as formol. This disinfectant and deodorant is applied to the paper in the same manner as mineral matters, such as kaolin, barium sulphate are applied in the manufacture of coated paper.

Thus the disinfectant chemicals are introduced into the paper in the form of paper pulp. It is also possible to mix these materials in the powdered form with the paper at the moment that it passes to the calender rolls and these substances are so chosen that they tend to heighten the luster of the paper finish. It should also be mentioned that this process can also be employed for rendering paper non-inflammable by the incorporation of such substances as triphenyl phosphate or tricresyl phosphate.

Bleaching Pulp

PAPER pulp, during agitation with bleaching liquor, is exposed to an air stream which is directed on a surface of the pulp not submerged in the liquor and sweeps away the gaseous products while also preventing overheating of the pulp. Into the apparatus, which it shown in the accompanying illustration, pulp preferably of a twenty-five to forty per cent concentration, mixed with a bleaching agent containing twenty to thirty grams of available chlorine per liter so that a mass with a pulp concentration of preferably eighteen to twenty-five per cent is produced, is introduced. An elevator (7) discharges the mixture onto an apron (15) from which it falls in a thin layer towards which is directed a series of nozzles (19) supplying air at a velocity of approximately 4,000 feet per minute. The air and the gases pass out by the pipe (20) which may be connected with an exhaust fan. The entering air may be cooled. British Patent No. 251,205.



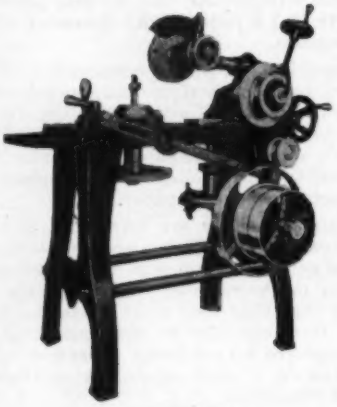
Experiences in the Manufacture of "Greaseproof" Paper

THE beating of the paper stock is carried out in a beater which is equipped with a lava stone bedplate and in a Jordan engine which is furnished with bronze knives. It is advisable to carry out the beating operation with the highest consistency of stock. In order to be able to work with the latter in the Jordan engine, compressed air is blown into the stock. The use of compressed air introduces a saving in power amounting to 45 per cent.

The average yearly consumption of power in a plant that makes "grease-proof" paper is 1316 kw. per net ton of paper produced. This includes the power that is consumed in operating the pumps which handle the pulp, the various mechanical machines in the plant, interior and exterior lighting, etc. Fifty per cent of the entire consumption of power is found in the beating operations, thus about 290 kw. in the beaters and 260 kw. in the Jordan engines. The drive of the constant and variable portions of the paper making machine requires approximately 180 kw., or 14 per cent. The figures given herewith are based on the gram weight, between 40 and 90 grams per square meter. The average production amounted to 160 kilograms of paper per effective inch of working width of machine per day.

In order to prevent the reddening of the paper after it is made, it is recommended that the stock be kept away from

Most Every Paper Mill Has Koegel Equipment



THE STANDARD
Capacity—8½-inch Diam. Slitters

Specifications: Floor space, 27"x 42"; speed of spindle, 55 revolutions; driving pulley, 9"x2½"—speed, 400 revolutions; emery wheel, 7"x¼"—speed, 3,000 revolutions; weight, about 425 lbs.

Over 800

Standard Koegel Patent Universal Slitter and Circular Knife Grinders are in the paper and pulp mills of the United States and Canada. What greater evidence could be offered for the universal service this grinder renders?

For Greater Capacity

The Koegel No. 4 Patent Universal Slitter and Circular Knife Grinder is built for Slitters up to 16" in diameter. In mills where larger diameter knives and slitters are used, 150 are in service.

Here are the specifications: Floor space, 32"x52"; speed of spindle, 55 revolutions; driving pulley, 10"x2½"—speed, 400 revolutions; emery wheel, 8"x½"—speed, 3,000 revolutions; weight, about 525 lbs.

THE KOEGEL No. 4
Capacity—16-inch Diam. Slitters

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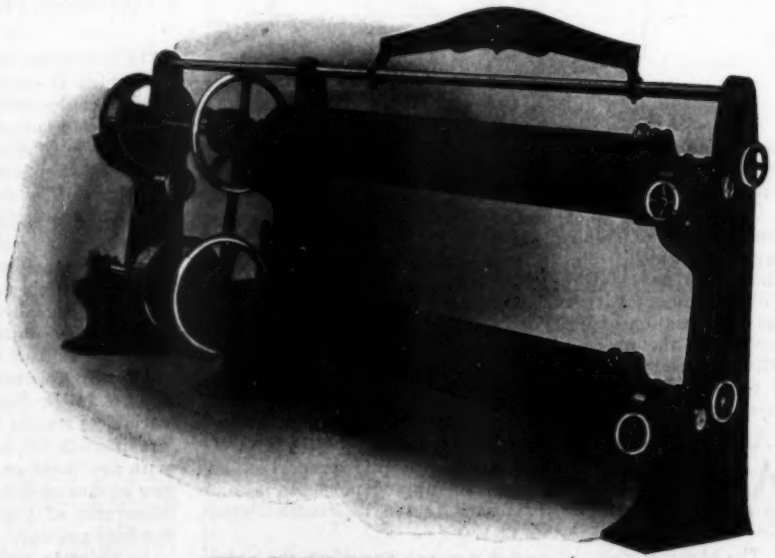
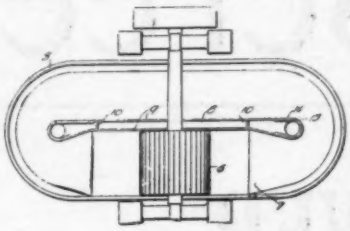


TWO DRUM REEL—Heavy Pattern

contact with iron, particularly wrought iron. It is also advisable to employ a limestone that is as free from iron as possible. It should not contain any more than 0.2 per cent iron, figured as Fe_2O_3. The cooked pulp must be washed as thoroughly and as quickly as possible directly after digestion is completed. Pulp, which is manufactured from stored wood, with a moisture content of not more than 35 per cent, shows a lesser tendency to redden. Papp. och Traevarutidskr. foer Finland, 1926, page 214.

Beating Engine

THE illustration shows a type of beating engine that has been patented in United States Patent, No. 1,599,141. This beating engine comprises a tank (5), a featherboard and a beater roll (6). Means are also present for removing the finished stock from the beater and this consists of a number of vertical horizontally spaced rollers arranged to form a chamber at each end of the featherboard and an outlet pipe connected with the lower end of each chamber.



Effect of Time of Heating on Sulphite Pulp

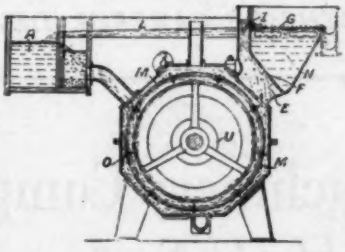
AN INTERESTING investigation has been made to determine the effect of a curtailed time of heating upon the constitution of a sulphite pulp and has been reported in Zellstoff und Papier, 1926, volume 6, pages 257-259.

Much can be done by suitable manipulation of the temperatures at different stages to shorten the total time of digestion of sulphite pulp, particularly the very prolonged operation of the Mitscherlich process. Experimental digestions showed that the early stage of heating up to the boil, which is generally extended over a period of four hours can be curtailed to a period of twenty minutes if, after reaching the temperature of 105 degrees C, the charge is held at this temperature for one hour, then again at a temperature of 110 degrees C for two hours and finally at a temperature of 120 degrees C for one hour before proceeding to the digestion proper at a temperature of 130 to 135 degrees C.

The object of the slow heating up is to give time for the penetration of the wood by the liquor, but in the region slightly above a temperature of 100 degrees C the velocity of the chemical reactions is still low, while the diffusion velocity is very much greater than at the usual heating-up stage. This provided the chemical reactions are not unduly hastened by proceeding too rapidly to the full digestion temperature, no trouble is to be feared from defective penetration by omitting the slow-heating up stages.

Rotary Paper Pulp Strainer

PAPER pulp or other fibrous material passes from a supply channel (A) to a closed container of polygonal cross-section surrounding a rotary drum (M), which is provided with outwardly projecting blades (O). Pulsations are caused which promote the passage of the finer fibers through the drum for discharge through a central outlet (U). The coarser fibers pass into an outlet chamber (E) and thence over a dam (I) and a flat strainer (G). The pulsations of the first strainer are communicated by the chamber (E) and a diaphragm (F) to the chamber (N) below the strainer (G). The fine fibers still present in the material passing over the strainer and may be conveyed by a trough (L) back to the channel (A) or to the outflow for the fibers from the interior of the drum. A plunger may be used for transmitting the pulsations in the chamber (E) to the chamber (N). A cylindrical strainer may replace the flat strainer (G). British Patent, No. 253,148.



Absorption of Moisture by Various Paper Fibers

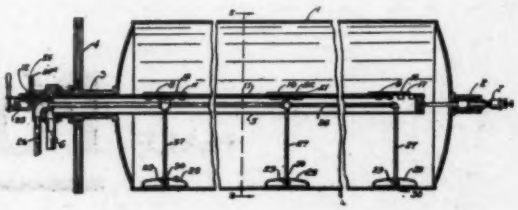
DIFFERENT types of paper making fibers react towards atmospheric moisture at different rates and to different equilibria. Comparative observations were made by teasing out the fibers of various half-stuffs, drying them completely, exposing them to atmospheres of various known relative humidities for a period of twelve hours, and determining the moisture taken up. Mitscherlich sulphite pulp absorbed, under similar conditions, about one per cent more moisture than Ritter-Kellner pulp, and unbleached pulps of each type absorbed slightly more than the same pulps bleached.

The absorption of moisture by the fibers did not rise proportionally with the degree of saturation of the atmosphere. The absorption of moisture by straw cellulose was almost identical with that of unbleached Mitscherlich wood pulp, but aspen cellulose, while behaving in the same way in atmospheres of low humidity, showed a remarkable increase when exposed to atmospheres above seventy per cent relative humidity, a value of 13.9 per cent being recorded on exposure to air at 80 per cent saturation.

The absorption of moisture by esparto pulp was extremely slow in atmospheres of low humidity, up to 50 per cent saturation, but became equivalent to that of wood pulp in an atmosphere of 80 per cent saturation. The variable response of the different fibers to atmospheric changes is reflected in the cockling of the paper in the printing shop, and the practice of separating and exposing the sheets by hanging them up in the shop for some hours before printing is undertaken is an important precaution. Zellstoff und Papier, 1926, pages 201 to 203.

Paper Dryer

UNITED STATES Patent No. 1,594,718 describes a paper dryer which includes in combination with a dryer roll a steam line extending into the roll, a valve arranged in the line within the roll for controlling the steam admitted into the roll. This enables the operator to control the heating of the roll by the use of a device, located externally to this roll, for adjusting this valve.



Making Pulp Board

UNITED STATES Patent, No. 1,598,260, describes a process for the manufacture of pulp board which consists in shaping a mixture of pulp and a binder into the form of a board, and providing within the board for the presence of an amount of water approximately equal to and not much more than the normal moisture of the fiber content. Then the sponge board is compacted in the presence of heat and thereafter it is cooled to a temperature of less than 212 degrees F. before releasing the pressure.

Properties of Purified Pulp

A COMPARISON of bleached sulphite wood pulp with pulp purified with lime and sodium sulphite is the subject of an extended series of investigations which are partly reported in the Journal of the Society of Chemical Industry of Japan, 1926, volume 29, pages 78-84.

On heating to a temperature of 95 to 100 degrees C. for a period of 22 to 84 hours, or storing for 47 days in air, the pulp gradually assumes a yellowish-brown color, the copper number increases, and the content of alpha cellulose decreases, these changes being more rapid and marked in the

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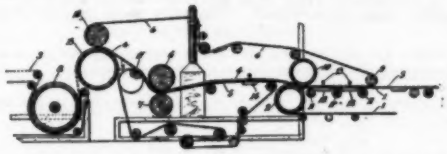
ordinary pulp than in the purified pulp. Viscose made from purified pulp differs in many respects from viscose made from ordinary pulp, and resembles rather the viscose from cotton cellulose in respect of the changes during ageing and of the properties of the regenerated celluloses. The copper number of the cellulose regenerated from the viscose, after ageing for different periods, increases with the duration of ageing, while the viscosity decreases. Here also the effects are more marked with ordinary pulp. These differences are due to the presence of degraded cellulose in the ordinary wood pulp.

Paper Making Machine

THE paper-making machine, which is described in United States Patent, No. 1,599,503, comprises a forming wire, a felt apron overlying a substantially flat section of the wire



to hold a length of paper web in a flat condition against the forming wire. A suction box is arranged beneath this section of the forming wire to withdraw the water while the web is held between the felt apron and the forming wire.

Light Colored Chemical Pulp from Resinous Wood

FRENCH Patent, No. 601,757, describes a process for the manufacture of a light colored chemical pulp from woods that contain considerable quantities of resins. It is known that such woods will absorb the acid calcium bisulphite liquors with a great deal of difficulty. The slowness of the absorption of the digestion liquor accounts for the incompleteness of the disintegration of the wood fibers. The action is only superficial and the inner parts of the wood chips suffer a browning action which is due to the high digestion temperature that is maintained throughout the process. This brownish coloration cannot be removed from the chemical pulp by subsequent bleaching.

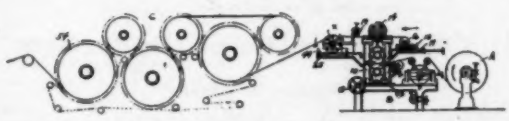
According to the new investigations that have been made on this subject, 100 grams of resinous wood absorb approximately seven and one-half cubic centimeters of the calcium bisulphite liquor, while as much as 20.5 cubic centimeters of a solution of magnesium bisulphite are absorbed. Thus as much of this liquor is absorbed as of the alkaline liquors that are commonly employed in the soda cellulose process. Hence these resinous woods, when treated with magnesium bisulphite liquors, yielded a pulp which was of good color and in satisfactory yield.

Machine Glazed Paper

MACHINE glazed paper is made in accordance with United States Patent, No. 1,598,793, by producing a glazed effect on one side of the paper with the aid of a Yankee drying cylinder and then finishing the rough side of the paper by the progressive action of pressure rolls. The paper is dried on the cylinder during this process.

Coating Paper

A METHOD of coating paper, which comprises the application of a layer of color to the paper and after the color has attained a suitable consistency troweling the color to com-



pact and make it smooth, is the subject of a patent. (See United States Patent, No. 1,597,218). The process is carried out in a machine, which is shown in the accompanying illustration, and which consists of a number of troweling bars, means for moving these bars successively into position, which permits the paper being drawn across them, and means for cleaning the bars after they have operated on the paper.

Resistance to Flow of Stock in Pipes

A NUMBER of investigations have been made to determine the differential pressures in a pipeline conducting paper stock with the idea of determining the resistance to the travel of the stock in the pipes. It was thus found that this resistance was 125 to 1,050 times as great as that to water. Three different kinds of stock, indicated by I, II and III below, were pumped through the pipes and following results obtained:

Stock No. 1 was a whole stuff of approximately 3.5 per cent density consisting of bleached chemical pulp and approximately 15 per cent kaolin.

Stock No. II was a rag half stuff of approximately 2 per cent density, beaten in a half stuff beater.

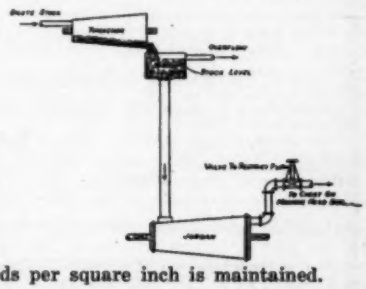
Stock No. III consisted of a half stuff of approximately 4 per cent density.

	I.	II.	III.
1. Net diameter of the piping in millimeters	150	100	125
2. Total length of the pipeline in meters	7	60	300
3. Number of 90 degree bends in the pipeline	1	5	8
4. Average speed of the stock flowing through the pipeline in meters per second	0.36	0.51	0.17
5. The pressure drop for water calculated from these figures in meters of water	0.086	0.223	0.115
6. Pressure drop measured for the stock in meters of water	1.4	30 to 35	100-120
7. Ratio of the pressure drop based on water	160	125 to 160	870 to 1050

For further details see Wochenblatt fuer Papierfabrikation, volume 56, pages 1552-3.

Hydrating Cellulose Fibers in Concentrated Stock

UNITED STATES Patent, No. 1,598,267, describes a process for the hydration of cellulose fibers in concentrated stock by means of an apparatus shown in the accompanying illustration. The apparatus is a continuous beating machine of the Jordan type, provided with rubbing surfaces. The stock is introduced at a concentration of over four parts of stock to ninety-six parts of water. A pressure of stock at the inlet to the machine of over five pounds per square inch is maintained.



Copper and Iron Compounds as Catalysts in the Bleaching of Cellulose

COPPER and iron compounds exert no harmful catalytic action when vegetable fibers are subjected to repeated washings with perborate washing agents. It has also been established that the strength of the cellulosic materials is not impaired by the presence of these metallic compounds.

In cooking in pure concentrated solutions of the perborates, copper and copper-iron compounds exert a strong catalytic action and decrease in the strength of the cellulosic materials is considerably accelerated. However, the presence of iron compounds alone does not give rise to any detectable catalytic action in highly concentrated solutions of the perborates.

The catalystic action of the copper salts and of the copper and iron compounds is completely counterbalanced by the presence of the sodium salt of fatty acids, and hence these metallic salts can exert no deleterious action on the fabrics that are washed with perborate washing agents.

The bleaching capacity, which is possessed by a small amount of perborate, which also contains a certain amount of sodium salt of a fatty acid, is greatest in the case of the pure solution, and is least in a solution of perborate and soda. Svensk. Kem. Tidskr., 1926, volume 4, pages 96 ff.

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New York, October 1, 1926.

WITH the summer and the vacation season over and with business settling down to a more serious vein and activity in many consuming fields showing substantial expansion, the market for paper has taken on added life and there is a better all around demand for this important commodity than has been recorded in several months. Consumers are buying in a larger way for no other reason than they are in need of bigger amounts of paper. This means, of course, that the demand is exceedingly healthy, and lends a satisfying aspect to the market as it now exists.

Reports from manufacturing centers almost without exception tell of mills speeding up operations to take care of the larger volume of orders coming in to them. There has been, in fact, a substantial broadening of demand for some classes of paper, and the livelier condition of the market has served not only to stiffen the tone of prices but in certain instances has effected a rise in quotations. There is still keen competition among producers to secure business, yet as the market broadens in its scope and consumers manifest greater desire to buy, manufacturers are adopting a firmer attitude regarding prices and display much less willingness to shade prices as an inducement to customers to place orders. In fact, it can be said the tendency in prices of most classes of paper is upward; manufacturers are taking the view that there is no justification for them continuing to market their product at prices which fail to net them a reasonable amount of profit, and it seems safe to state that an advancing price condition probably will be witnessed between now and late in the current year.

Business men generally look for a busy fall and early winter. A very large retail movement of merchandise is expected during the balance of this year; in fact, this movement already has set in. Advertising is on a large scale, and gives promise of a further increase. The outlook for an exceptionally heavy consumption of paper of various kinds during the next several months was never brighter. Newsprint manufacturers seem assured of a broad outlet for their product; coarse paper producers expect an additional gain in the already large consumption of wrapping and tissue; fine paper demand appears bound to expand, while the prospects for a big consumption of book paper, box board and other grades is very encouraging.

The monthly statistical report of the American Paper and Pulp Association and affiliated organizations shows that during July production of paper and board in the United States amounted to 540,660 net tons, recording a decline of approximately 5 per cent from the 572,968 tons produced by identical mills in the preceding month. This decrease is nothing more than seasonal, however. The July production also compared with 555,696 tons in May, 573,528 tons in April, 599,719 tons in March, 523,657 tons in February, and 548,820 tons in January. Stocks of paper at mills decreased appreciably during July, amounting to 246,560 net tons of all grades at the end of that month, contrasting with 258,149 tons at the end of June. Shipments from mills aggregated 550,989 tons in July, which were above the production in that month, against 556,868 tons shipped in June.

Production of newsprint in the United States in July amounted to 140,516 tons and shipments to 142,690 tons, according to the News Print Service Bureau. Production in Canada amounted to 163,037 tons and shipments from mills to 161,824 tons, making a total U. S. and Canadian production of 303,553 tons and shipments of 304,514 tons. There were also 16,850 tons of newsprint made in Newfoundland and 956 tons made in Mexico, so that the total North American output in July was 321,359 tons. The newsprint mills also made 1,742 tons of hanging paper in July, 316 tons of which was produced in Canada. During July the newsprint mills in the U. S. operated at 95 per cent of rated capacity and those in Canada at 99 per cent. The U. S. mills made 11 per cent more newsprint in the first seven months of this year than in the same time last year, while the Canadian mills made 22 per cent more. The combined production of the two countries in the first seven months of 1926, totalling 2,041,389 tons was 16 per cent larger than the 1,753,889 tons produced in the similar period a year ago. Stocks of newsprint at U. S. mills amounted to 16,524 tons at the end of July and at Canadian mills to 12,963 tons, making a combined total of 29,487 tons—equivalent to 2.5 days' average production.

According to statistics compiled by the New York Evening Post, there were 108,941,000 agate lines of advertising in the newspapers of 23 principal cities of the United States during June last, contrasted with 98,733,000 lines in June, 1925, an increase of 10 per cent, and 100,354,000 lines in June, 1924, a gain of 8 per cent. There was an increase of 8 per cent during the first six months of this year over 1925 and 8 per cent over 1924. New York City newspapers carried about 10 per cent more advertising in the first seven months of the current year than in the same time a year ago and 12 per cent more than in the corresponding period in 1924. There was 9 per cent more pages of advertising and reading matter in these papers in the first seven months of 1926 than in these months last year. Advertising in national monthly and weekly periodicals for the first seven months of the current year amounted to 15,737,000 agate lines, compared with 14,476,000 lines in the similar time a year ago, a gain of 9 per cent, and 17,661,000 lines in the first seven months of 1920, a loss of 11 per cent.

The Bureau of Labor Statistics of the United States Department of Labor in Washington states that reports received from 204 paper and pulp mills gave their June employment at 54,959, decreasing in July to 54,401, a decline of one per cent. The payrolls in these mills also decreased from $1,480,484 in June to $1,413,540 in July, a drop of 4.5 per cent.

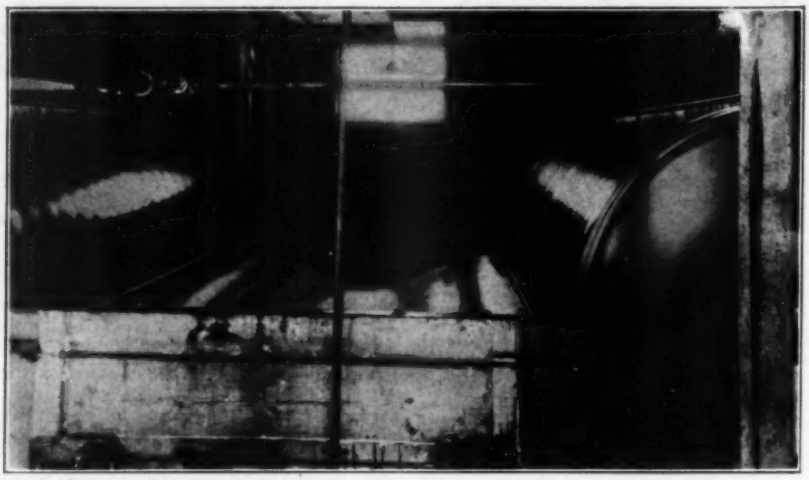
There appears scant reason for anyone to expect a reduction in the contract basis of newsprint over the remainder of this year. With mills running at close to maximum capacity and readily marketing their production, it is likely prices will remain firm. It is evident on all sides that consumption of print paper is heavy. Newspapers are carrying a very large amount of advertising, and are printing larger issues, weekdays and Sundays, than at any time since last spring.

Book paper is in steady movement and the demand is showing some expansion. Prices are firm, and the price-cutting tendency which was evident during the summer period appears to have disappeared. Coarse papers are in excellent demand. Retailers are absorbing both wrapping and tissue in good amounts, and prices of these grades—tissue especially—are tending higher. It is stated some kraft wrapping mills are sold up for two and three months, a pleasing feature of the market recently being the large buying by converters.

Prices of some lines of fine papers have been reduced slightly, the decline amounting to about 10 per cent. The reduction has served to stimulate demand, according to reports, and most fine paper manufacturers are busier than they have been in a lengthy period. Cover, glassine and specialty papers are in steady demand and ruling firm in price.

A marked improvement is noted in the call for board supplies. Particularly is this so in the Middle West, while in large centers of the East like New York and Philadelphia paper box manufacturers and other consumers have increased their buying also. Board quotations are well maintained though essentially unchanged.

THE NORTH WATER FILTER

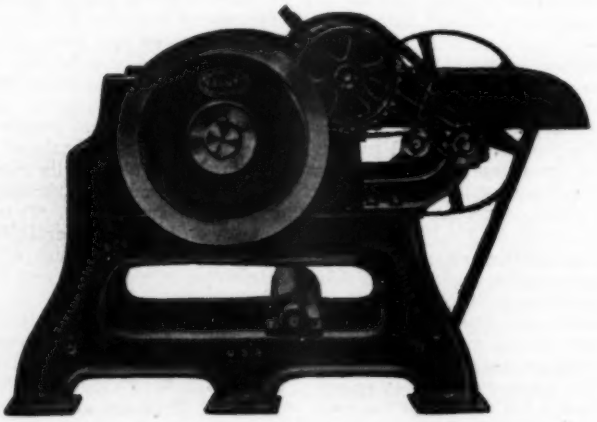


Above cut is 20,000,000 gallon outfit for Northern Paper Mills. We have one 100,000,000 gallon installation and over 1,000 smaller jobs.
THREE SIZES.

Save-Alls Stone Bed Plates

See Page 347 in the 1926 Paper and Pu'p Mill Catalogue.

GREEN BAY FOUNDRY AND MACHINE WORKS, Green Bay, Wis.



RAG CUTTERS

Whatever You Cut, a GIANT Will Solve Your Problem

LET US FIGURE IT OUT FOR YOU

Taylor, Stiles & Co., Riegelsville, N. J., U.S.A.

WATEROUS ENGINE WORKS
Brantford, Ont., Canada
Canadian Representatives

R. J. MARX
133 Finsbury Pavement, London E. C.
Sole Agents for Europe

Papermaking Rags

Reports tell of a little improvement in demand from paper mills for some classes of rags, yet the market is not near so active as usually is witnessed at about this period of the year. Ordinarily consumers are in evidence as fairly active buyers around the beginning of October, covering fall and early winter requirements, but for some reason or another demand thus far this year has been held very much in abeyance; there seems to be a good deal of hesitancy on the part of paper manufacturers to buy unless having urgent need of supplies. Nevertheless there has been at least some expansion of market activity and it can be said the price tone exhibits increased steadiness, if not firmness.

The statistical position of papermaking rags would appear to be rather in favor of buyers. On the other hand, the situation as regards supplies is not so favorable that any appreciable increase in demand would fail to lead to an uptrend in values. In fact, as concerns some kinds of rags it is very apparent a firm price condition exists; indications are dealers are looking for higher prices, and it would seem quite likely the market will record a rise during the next few weeks. Probably the feature of the entire situation is the firmness of the markets abroad and the consequent inability of buyers to get rags in European countries at cheaper prices than have been prevailing recently. There have been efforts made to drive down market values, yet prices have withstood any attempt to lower them and there seems every reason to believe shippers on the other side of the Atlantic are in a strong position and will at least maintain ruling prices. This is important because for the past several years paper mills have been purchasing foreign rags in very large quantities and frequently have been able to get imported supplies at cheaper costs than domestic rags and thus have effected a downtrend in the domestic market.

Importers, in fact, lay much stress on the firmness of prices abroad. Take for example roofing rags. During the last month demand from consuming mills for these rags has been quiet; such buying as has been done has been spotty in character and of rather light tonnage; yet in spite of the limited volume of buying prices in the various European countries have held surprisingly steady. The situation has reached a point where importers are hesitating to buy on their own account because the prices they are obliged to grant are well above a parity with those they can secure in sales to mills here. This indicates, of course, that Europe is consuming more rags, have fewer to export or else are afforded a better market elsewhere than in the United States. Reports from Germany say paper mills there are using much larger quantities of rags and are paying higher prices than dealers are able to obtain in exporting to America; therefore less supply is available to importers here. Very much the same condition evidently exists in other sources abroad.

As regards the better qualities, there is still a slack demand for supplies from writing paper manufacturers. It appears as if high-grade papers of rag content are having much difficulty competing with sulphite bonds, and writing paper producers accordingly are using fewer rags and are enabled to keep out of sight as buyers for considerable periods of time. New cuttings are wanted in a spotty manner, now and then some fair-sized buying is reported but little of a concerted nature, and the papermakers continue to insist prices of these rags must go down. Dealers, on the other hand, argue they are securing far less than normal supplies from clothing houses and that the increased cost of collecting, grading, shipping, etc., compels them to ask the prices they endeavor to get.

Current quotations on roofing stock range around 1.75 cents a pound f. o. b. dealer's shipping points for No. 1 domestic packing, and 1.45 cents for No. 2 stock, while foreign dark colored cottons are quoted at 1.65 cents ex dock New York for forward shipment from abroad. Mills appear to be purchasing just enough supply to hold prices steady, with the tendency apparently in an upward direction and with dealers predicting an advance of a few dollars per ton in the month of October.

Old whites are quoted at around 6.50 cents a pound at shipping points for No. 1 repacked, and 3.50 cents for No. 2 repacked whites. Repacked thirds and blues are available to mills at 2.50 to 2.75 cents at shipping points, and miscellaneous packing at round 1.75 cents. Old cotton batting has firmed in price to where dealers generally ask 3.75 cents a pound f. o. b. shipping points.

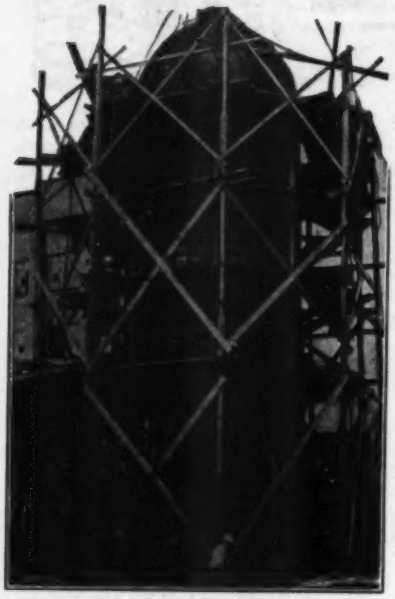
It is difficult to ascertain definitely what prices prevail on most grades of new cuttings. Dealers quote fairly firmly but doubtless are shading prices in some cases to effect sales. No. 1 white shirt cuttings are quoted at about 12 cents a pound at points of shipment, fancy shirt cuttings at 6 cents, No. 1 washables at 4.75 to 5 cents, blue overall cuttings at 7.75 to 8 cents, light silesias at 7.50 to 7.75 cents, and unbleached muslins at 11.50 to 11.75 cents.

In foreign rags, there is some movement of linens at maintained prices, and imported roofing rags are selling in limited tonnage in certain quarters. As aforementioned, prices of foreign rags are holding quite steady in most instances.

Average quotations f. o. b. shipping points and ex dock New York are as follows:

New Stock—	New York and Chicago
White shirt cuttings, No. 1	11.75-12.25
White shirt cuttings, No. 2	8.25- 8.75
Fancy shirt cuttings	6.00- 6.25
Washables, No. 1	4.75- 5.00
Unbleached muslins	11.50-11.75
White lawns	9.25- 9.50
Overall cuttings, blue	7.75- 8.00
Black silesias	5.00- 5.25
Light flannelettes	9.50- 9.75
Canton flannels, bleached	9.50- 9.75
Canton flannels, unbleached	8.50- 8.75
Shoe cuttings, bleached	10.50-11.00
Shoe cuttings, unbleached	9.50-10.00
Light silesias	7.50- 7.75
O. D. khaki cuttings	6.00- 6.25
Mixed khaki cuttings	5.25- 5.50
Corduroy cuttings	4.00- 4.25
Cottonade cuttings	4.00- 4.25
Linens, No. 1 white, foreign	13.00-13.50
Light prints, foreign	2.75- 3.00
Old Stock—	
Whites, No. 1 repacked	6.25- 6.75
Whites, No. 2 repacked	3.25- 3.75
Whites, house soiled	2.25- 2.50
Whites, street soiled	2.00- 2.25
Lace curtains	6.25- 6.50
Thirds and blues, rough	1.65- 1.85
Thirds and blues, repacked	2.50- 2.75
Black stockings	4.00- 4.25
Cotton canvas, No. 1	5.50- 5.75
White cotton batting	3.65- 3.85
Roofing, No. 1	1.70- 1.80
Roofing, No. 2	1.40- 1.50
Linsey garments, foreign	1.75- 1.85
Dark colored cottons, foreign	1.60- 1.70
Blue linens, foreign	4.00- 4.25
Gray linens, foreign	4.25- 4.50
White linens, foreign	8.00- 8.50
Light prints, extra, foreign	1.75- 2.00

Your Production Barometer!



Good, lasting equipment will automatically "iron out" your production "lulls and slack." It will act as your production barometer—a profitable one.

Keeping production up at the lowest operating cost is significant of Manitowoc equipment designed for paper mills. Everywhere Manitowoc equipment is in service it bears witness to this fact.

Because Manitowoc Incinerators, Digesters, Rotaries, Diffuser Tanks, Disc Evaporators, Barking Drums, Refiners, etc., are built up to a high standard, they perform economically and increase mill efficiency. They are designed and constructed to meet the exacting conditions of your mill.

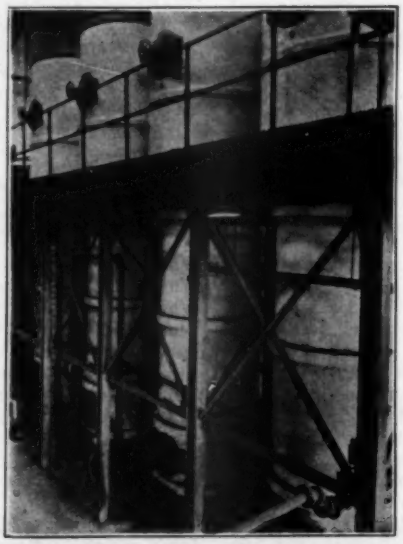
Write for special bulletin on paper mill equipment.

MANITOWOC ENGINEERING WORKS, Manitowoc, Wisconsin

MANITOWOC (M)

IMPROVED BADGER BLACK LIQUOR EVAPORATORS

Recent Installation
NORTHWEST PAPER CO.
Cloquet, Minn.



NON-FOAMING

MAXIMUM STEAM ECONOMY

NO ENTRAINMENT

SODA and SULPHATE PROCESSES

E. B. BADGER & SONS CO., Boston, U. S. A.

See page 314 in the 1926 Paper and Pulp Mill Catalogue

Rope and Bagging

Demand for old rope from paper manufacturers is moderately consistent; there is not much snap to the purchasing operations of consumers but enough domestic old rope is being absorbed right along to sustain market prices on a steady level. On the other hand, consumers manifest limited interest in foreign old rope except possibly in cases where they are buying direct abroad. Domestic old No. 1 manila rope is fetching 5.25 cents a pound f. o. b. shipping points, with some purchases probably put through down to 5 cents, whereas importers acknowledge about all they can obtain for foreign manila rope is in the neighborhood of 4.25 cents a pound ex dock New York or other American Atlantic ports. Old mixed strings experienced a flurry of demand during the last month and at one time sold at substantially higher prices but quotations are now back to a level of around 1.60 cents a pound at dealers' points.

Bagging is holding its own in price. Papermakers are buying cautiously, against immediate requirements principally, yet the market does not seem to be largely supplied A record-breaking raw jute crop is forecast in India this year—some 10,888,000 bales—and it is believed, by consumers at any rate, that prices of jute and new burlap eventually will be affected adversely, and that scrap bagging will in turn recede to lower value levels.

Dealers quote No. 1 scrap bagging at 2.25 cents a pound or an eighth of a cent less at shipping points, and roofing bagging at around 1.35 cents. Gunny has stiffened a little in price to where at least 3.65 cents a pound at shipping points is quoted on No. 1 domestic gunny.

F. o. b. shipping point and ex dock New York quotations follow:

	New York and Chicago
Gunny, No. 1 domestic	3.65-3.80
Gunny, No. 1 foreign	3.00-3.25
Scrap bagging, No. 1	2.15-2.25
Roofing bagging	1.30-1.40
Wool tares, heavy	3.75-4.00
Wool tares, light	3.50-3.75
Manila rope, No. 1 foreign	4.00-4.25
Manila rope, No. 1 domestic	5.00-5.25
Sisal strings	2.25-2.50
Mixed strings	1.60-1.75

Old Paper

The improvement recorded in the old paper market during the latter part of August continued in September; prices have scored a further advance, and the demand is keeping up in comparatively large volume. Board mills are the leading buyers at present; of course, they are always the largest purchasers, but what is meant is that this class of consumers are absorbing supplies in relatively bigger tonnage than are other buyers, so that prices of the lower qualities or board-mill grades exhibit a particularly firm tone. Middle West consumers have done some buying in the East, which has helped to strengthen the market in New York and other eastern centers, while prices in the West are quite firm and are relatively above those prevailing in the East.

Mixed paper of No. 1 quality is now quoted at a minimum of 65 cents a hundred pounds f. o. b. New York and other points in the East, and higher prices are noted in the Middle West. Folded news—in proportionately less call than mixed paper—is quoted at approximately the same level or at about 65 cents upwards, depending on the packing and the point of shipment. Book stock is selling at 1.15 to 1.25 cents per pound for No. 1 heavy books, and at 90 cents to $1 per hundred pounds for No. 1 crumpled books. Old kraft has advanced to about 2.10 cents or higher per pound at shipping points, and shavings have stiffened in price slightly, dealers quoting 3.50 to 3.75 cents a pound for No. 1 hard white and 2.90 to 3.15 cents for No. 1 soft white shavings.

The following are quotations named by dealers f. o. b. shipping points:

	New York and Chicago
Hard white shavings, No. 1	3.50-3.75
Hard white shavings, No. 2	3.00-3.25

GDC

IF YOU are confronted with special color problems such as fastness to light, fastness to alkali or soap; or if you have two-sidedness-troubles of delicate shades, let our newly equipped laboratories assist you.

230 Fifth Avenue
New York, N. Y.

GENERAL DYESTUFF CORPORATION

JOSEPH GATTI President and Treasurer

GATTI Paper Stock Corporation

Formerly with the Gatti-McQuade Co.

Paper Manufacturers' Supplies

COTTON AND WOOLEN WASTE

All Grades of Rags and Paper Stock, New Wrapping Paper, Box Board and Cordage

Main Office
41 East 42nd St., New York
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Packing House
13th and Monroe Sts.
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Western Paper Makers Chemical Company
Paper Makers Chemical Company

Kalamazoo, Mich. Holyoke, Mass. Easton, Pa.
Jacksonville, Fla. Pensacola, Fla. St. Austell, England

Rosin Size, Satin White, Clays, Fillers
Foam Killer, Felt Soap and Other Specialties

UNION

The Union Sulphur Co.

Main Offices:
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NEW YORK CITY

SULPHUR

Sulphur

A FIRST REQUISITE

IN

Paper Making

Large Production
Ample Reserves
Prompt Deliveries
Purity 99½%

TEXAS GULF SULPHUR CO.
41 E. 42nd Street New York City
Mine Gulf, Matagorda County, Texas

SOUTHWARK HYDRAULIC PRESSES

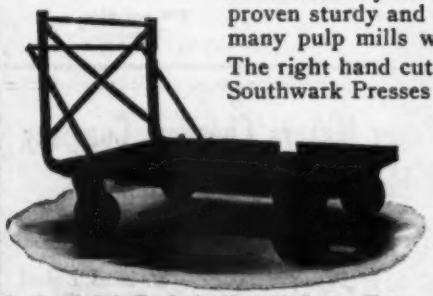
for Pulp, Sulphite, Baling, Etc.

HYDRAULIC PUMPS, VALVES, FITTINGS, SHOCK ABSORBERS, PULP TRUCKS, ETC.

Southwark Hydraulic Presses for dehydrating pulp have proven sturdy and efficient machines in every one of the many pulp mills where we have installed them.

The right hand cut shows an installation of four 600-ton Southwark Presses in a large pulp and paper mill. These presses are designed for use with Southwark Pulp Trucks, the trucks are loaded and run under the press, the pulp being compressed directly on the truck.

This feature gives fast operation, saves labor and eliminates curbs, boxes or other containers on the press.



Southwark Pulp Truck, for Use with Presses Shown at the Right. Saves Time and Labor

Four 600-Ton Southwark Pulp Presses, Minnesota & Ontario Paper Co., International Falls, Minn.

SOUTHWARK FOUNDRY AND MACHINE CO.

AKRON, O.
100 E. South St.

400 Washington Ave.
PHILADELPHIA, PA.

CHICAGO
343 S. Dearborn St.

Soft white shavings	2.90-3.15
Colored shavings	.90-1.00
Heavy book, No. 1	1.15-1.25
Crumpled book, No. 1	.90-1.00
Ledger stock	1.50-1.75
Kraft, No. 1	2.10-2.20
Manilas, No. 1	.90-1.00
White blank news	1.80-1.90
Overissue news, No. 1	.75- .90
Folded news	.65- .80
Sulphite mill wrappings	.80- .90
Mixed paper, No. 1	.65- .75
Common paper	.45- .55

Pulp Wood

Reports state that, with the season for peeling pulp wood now over, it can be estimated that about the same quantity was taken out this year as last year. This, however, is not believed to be sufficient because there is a much larger consumption at present, and it is felt a very strong market condition is likely to develop this winter. Scarcity of labor all summer in the wood pulp camps has been noted and it is this factor which has prevented cutters getting out a larger supply. The market at the moment is firm, demand good and giving promise of growing better.

Prices prevailing in Canada are reported approximately as follows: North of North Bay, Ont., peeled spruce and balsam, $8 and $10 per cord; south of North Bay, $10.50 to $11; rossed spruce in the north, $10 to $11; poplar in the north, $5 to $6.50, and in the southern parts of Ontario, $8 to $9, according to freight rates and availability.

Pulp wood exports from Canada, nearly all of which comes to the United States, have been smaller this year by a good margin totalling for the first eight months of the year 976,345 cords, valued at $9,644,474, compared with 1,067,780 cords of a value of $10,538,837 in the corresponding period last year.

Mechanical Pulp

A firm situation exists in mechanical pulp, and prospects are for a strong market condition during the coming winter. Consumption of ground wood is heavy. Newsprint mills are working at close to maximum capacity and are using up just about all the ground wood which their plants produce; as evidence of this it is stated practically no mechanical pulp of domestic make is available in the open market at present—for no other reason than that grinders need all the supply they have and are not selling other than possibly to regular customers. Such supply of ground wood as is reaching the market comes almost entirely from Canadian sources, where there are some few mills which produce for the open market. Moreover, there is little or no mechanical pulp being imported from Europe. With Norwegian mills shut down because of a strike, the production across the Atlantic is very limited, and it is asserted that if the tie-up of the Norwegian pulp industry continues much longer it is quite probable paper manufacturers in England will be obliged to look to Canada to secure ground wood, in which event there is little question the market here would be appreciably affected.

Domestic ground wood is quoted nominally at around $32 a ton f. o. b. pulp mills, while quotations from Canada range generally between $29 and $30 per ton at shipping points, depending on the air dry test and the haul from producing to consuming centers. Scandinavian ground wood is quoted at about $39 a ton for dry pulp ex dock American Atlantic ports.

Production of mechanical pulp in the United States in July totaled 84,628 net tons, against 105,910 tons by identical mills in June, and mill stocks at the end of July aggregated 146,216 tons, compared with 156,323 tons a month previous.

Chemical Pulp

Demand for domestic chemical wood pulp is good, producers are reported well supplied with orders, pulp is moving into consuming channels in gradually increasing tonnage, and the price tone is firm. In other words, the situation is just about all that could be desired by those on the selling side of the trade. Consumers not only are buying freely to provide for direct needs, but also are anticipating

SOLVAY
STANDARD IN SODA SINCE 1881
Quality and Service Guaranteed by the Largest Source of Supply
Soda Ash
Caustic Soda
Over 75 stock distributing points assure prompt shipment with minimum transportation charges.
The Solvay Process Co.
Detroit, Mich.; SYRACUSE, N. Y.; Hutchinson, Kas.
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ALUMINUM SULPHATE
The General Chemical Company manufactures to standards of purity and uniformity nowhere excelled—standards which are identical in each of the Company's many plants. Wherever you are, the chemicals you receive are of standardized General Chemical quality.
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INTERNATIONAL

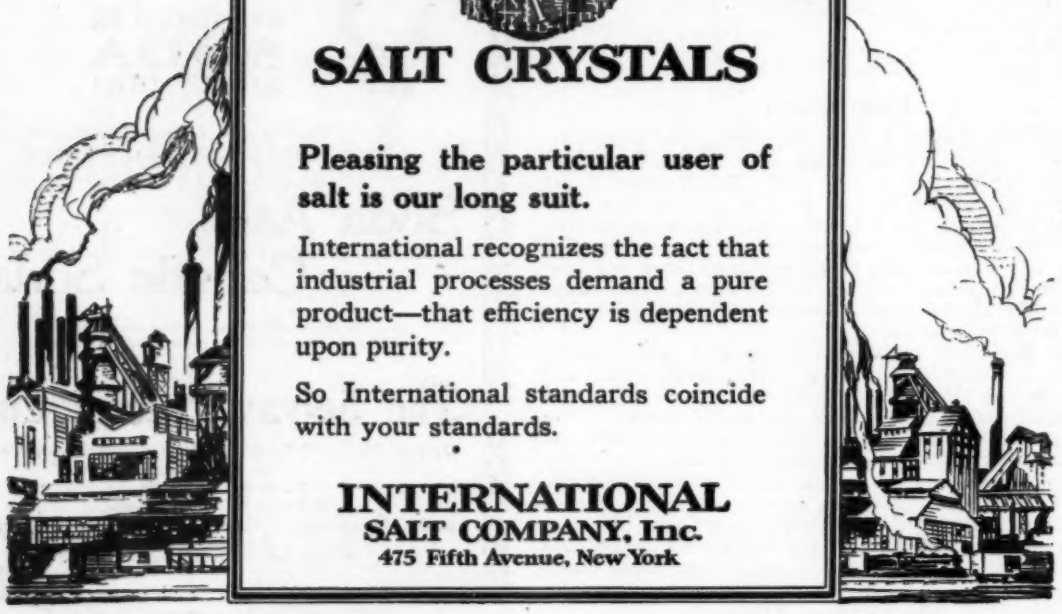
SALT CRYSTALS

Pleasing the particular user of salt is our long suit.

International recognizes the fact that industrial processes demand a pure product—that efficiency is dependent upon purity.

So International standards coincide with your standards.

INTERNATIONAL SALT COMPANY, Inc.
475 Fifth Avenue, New York



Uncle Jake says

The surest way to hold a soft job is to put a lot of hard work into it.

We put a lot of hard work into K.V.P. Bond, but it has paid us in satisfaction and it is paying our customers in the using.

The things in this world that come by chance, go by chance. Hard Work and Know How, constitute a team that is hard to beat. K.V.P. Bond is the printers' delight and his customers' satisfaction.

Uncle Jake
of the
KALAMAZOO VEGETABLE PARCHMENT CO.
KALAMAZOO, MICHIGAN

New Papers

Writing—	
White rag	15-40
White sulphite	10-30
Colored rag	15-40
Colored sulphite	9-30
Ledger—	
White rag	16-40
White sulphite	11-30
Colored sulphite	10-30
Colored rag	15-40
Bonds—	
White rag	16-40
White sulphite	8-30
Colored sulphite	8-30
Colored rag	15-40
Book—	
No. 1 S. & S. C.	6.50- 8.00
Machine finished	6.25- 8.00
English finished	6.25- 8.00
Coated and enameled	8.00-14.00
Lithograph, M. F.	8.50-15.00
Newsprint—	
Rolls, contract	3.25- ....
Rolls, transient	3.50- ....
Sheets	3.75- 4.00
Side runs	3.00- 3.25
Cover Stock—	
Coated, both sides	10.25
Coated, one side	10.15
Tissue—	
No. 1 white, 20x30	.70- .80
No. 2 white, 24x36	.65- .75
No. 1 manila, 24x36	.65- .75
Kraft	.90- 1.00
Wrapping—	
No. 1 Kraft	6.00- 6.50
No. 2 Kraft	5.25- 5.50
Southern Kraft	4.75- 5.00
Boards—	New York and Chicago
Solid news	47.50-50.00
Straw	52.50-57.50
Plain chip	42.50-45.00
White coated chip	55.00-60.00
Manila coated chip	52.50-57.50
Binder's board	70.00-75.00

Chemical Pulp

(Continued from page 1277)

requirements quite readily and are making contracts covering forward shipments a good ways ahead. With imported pulps firm and with indications pointing to a comparative scarcity of some grades of foreign, pulp manufacturers in the United States and Canada appear to be facing a period of excellent business activity and profitable prices.

A feature of the market during the past few weeks has been the advance announced in the price of the well-known brand of Alpha sulphite, which is used as a substitute for rag stock in the manufacture of writing papers. The quotation on this pulp was increased half a cent per pound from 5.50 to 6 cents at the pulp mill, effective October 1. Prices of other qualities of bleached sulphite tend higher, although no actual changes have yet taken place; on the other hand, most producers have raised quotations on No. 1 strong unbleached sulphite slightly to where 3 cents a pound constitutes about the lowest basis named f. o. b. pulp plants. Bleached soda pulp is firm at 3.75 and 4 cents per pound at producing mills, while No. 1 kraft pulp is fetching around 3 cents at shipping points.

U. S. mills produced a total of 107,643 tons of chemical pulp in July, contrasted with 108,513 tons in the preceding month. Stocks at pulp mills at the end of July amounted to 22,358 tons.

Quotations f. o. b. pulp mills are as follows:

Bleached sulphite	4.00-4.75
Easy bleaching sulphite	3.20-3.40
Unbleached sulphite, No. 1 strong (news grade)	3.00-3.15
Unbleached sulphite, No. 1 book	3.25-3.50
Soda pulp, bleached	3.75-4.00
Mitscherlich, unbleached	3.25-3.50
Kraft, No. 1	2.90-3.10
Screenings, refined	1.40-1.60

Chemicals

Casein continues high in price, the market being supported by fairly heavy buying by paper manufacturers. Domestic casein is quoted from 16 to 18 cents a pound and the imported article at 17 to 19 cents, duty paid. Soda ash is steady quotably at 1.38 cents a pound at works for sizable lots, packed in bags. Caustic soda is quoted at 3.10 to 3.15 cents per pound in large drums, f. o. b. works, and some producers quote 3.20 and 3.25 cents for spot shipments. Brimstone rules firm in price at $18 to $19 per ton, in bulk, at mines.

Average quotations are as follows:

Alum, lump ammonia	3.50- 3.75
Alum, lump starch	3.75- 4.00
Blanc fixe, powder	4.00- 4.25
Bleaching powder	2.00- 2.40
Brimstone (long ton, at mine)	18.00-19.00
Casein (duty paid)	16.00-19.00
Caustic soda, spot delivery	3.10- 3.25
China clay, domestic washed	8.00-10.00
China clay, foreign	13.00-20.00
Rosin, grade E	15.75-15.85
Satin white	2.00- 2.25
Soda ash, 58 per cent light (bags)	1.38- ....
Starch, papermakers', in bags	3.42- ....
Talc (ton)	16.00-18.00

Nash Engineering Co. to Move New York Office

The Nash Engineering Company of South Norwalk, Conn., will move its New York sales office from 350 Madison Avenue to the great new Graybar Building, which will be the largest office building above ground in the world, between April 1st and May 1st of next year. This was decided upon partly because of the increased business of the Nash Engineering Company, which made additional space imperative.

The Graybar Building is being erected by the Todd, Robertson, Todd Engineering Corporation right next to the Grand Central Station, between 43rd and 44th Streets, and Lexington Avenue and Depew Place. It was designed by the firm of Messrs. Sloan and Robertson and will have a forty-foot concourse which will lead right into the Station and serve as the Eastern entrance to that important terminal.

Eastern Offices, Inc., are the owners of the building.

The Messinger Paper Co., Chicago, Ill., announces a change in the organization and control of the company. The firm is now headed by H. A. Washburn as president and treasurer, F. W. Smalley, vice-president, J. H. Maney, vice-president, E. V. Zahringer, secretary. Headquarters will remain at 732 W. Van Buren St., Chicago, and the same line of products as formerly will be carried.

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KRAFT PULPS

Foreign and Domestic
GROUND
WOOD

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NEW YORK
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E. B. Eddy Company, Ltd., Hull, Canada

Canadian Kraft Limited, Three Rivers, Canada
Dealers in Wayagamack Kraft Pulp

Howard Smith Paper Mills, Montreal, Quebec
EASTERN AGENTS of Sulphite Pulp. Made by
Port Huron Sulphite & Paper Co., Port Huron, Mich.

The B QUALITY PULPS

"HAFSLUND BEAR"
Bleached Sulphite

"FORSHAGA"
Bleached Sulphite

"HURUM SPECIAL"
Extra Strong Kraft

"BAMBLE"
Extra Strong Kraft

The Borregaard Company
200 Fifth Ave. Incorporated New York, N.Y.

EXPORTS

Exports of paper and board from the United States during the month of July, 1926, were valued at $2,233,759, thus registering a slight increase over the value of shipments in the preceding month and also over exports in July, 1925, according to official statistics issued by the Department of Commerce in Washington. Exports during the first seven months this year were valued at $15,681,885, recording an appreciable gain over the value of shipments of $13,605,844 in the corresponding period last year.

Foreign shipments of paper board in July were somewhat lower than during June last, but were considerable in excess of those during the similar month a year ago, the largest gains having occurred in exports of box boards and bristol boards, which increased 100 per cent and 275 per cent respectively. Wrapping paper, including greaseproof paper, and sheathing and building papers were shipped in smaller quantities than either in June, 1926, or July, 1925, but losses in these lines were more than offset by the heavy increases in exports of newsprint and writing papers. Exports of newsprint in July were 3,804,295 pounds, valued at $148,457, compared with 1,936,332 pounds of a value of $87,796 in July, 1925. Exports of writing paper totaled 1,077,987 pounds of a value of $162,709 in July last, against 334,191 pounds of a value of $75,702 in the same month a year ago.

Among paper manufactures and specialties, exports of tissue and crepe papers, towels and napkins, filing folders and office forms; papeteries, envelopes, cash register paper and vulcanized fibre products showed a gain in comparison with shipments in July last year. Exports of paper bags and boxes, which have been showing a downward trend for some months, improved considerably over the month of June but were still under the level of shipments during July, 1925.

IMPORTS

Wood Pulp

The market for imported wood pulp is very firm, and quite active. There has been, in fact, a marked strengthening of prices during the past month; the lower edge of quotational levels has been moved up at least $2 to $3 per ton, and the tendency in values at present is upward decidedly. Consumers have operated actively as buyers, especially in sulphite, and have contracted for a good part of their requirements for shipment from abroad in 1927. The markets in Europe are firm to an extreme, manufacturers are entering selling commitments cautiously, are letting down in their offerings, and seem to anticipate a further rise in prices.

The buying movement in sulphite has been quite broad in scope. Paper manufacturers in the United States have purchased freely and in heavy tonnage. Not only have supplies for first open water shipment in the spring been contracted for on a large scale but considerable buying for shipment later next year has been recorded. Kraft pulp has been in relatively less demand than sulphite, yet sizable orders have been placed for such pulp in some quarters. Importers are of the opinion a squeeze may occur in kraft during the next month or two when consumers are expected to come in en masse to contract for 1927 needs. There is very little supply of kraft still available in Sweden for this year's shipment—the statement being made by one authority in the trade that not more than 3,000 tons are unsold for the balance of 1926—and it is felt a sharp advance in prices may be recorded if demand develops in the volume it is expected to.

Imports of wood pulp into the United States continue on a large scale. During July total importations of chemical pulp of all grades were 115,572 long tons, valued at $7,397,648, compared with 122,238 tons of a value of $7,937,648 imported in June this year, and 96,341 tons of a value of $6,169,450 in July, 1925, according to Department of Commerce figures. July imports were larger than in any month until then this year with the single exception of June. July imports brought the total for the first seven months of this year up to 715,603 long tons, giving a monthly average of 102,229 tons, contrasted with an average of 99,327 tons monthly in the similar period a year ago. July importations of mechanical pulp amounted to 19,326 long tons, valued at $690,366, against 17,078 tons imported in the preceding month, and 20,865 tons in July last year. Total receipts of mechanical pulp in the first seven months of this year were 138,753 tons, giving a monthly average of 19,821 tons, compared with 22,456 tons average in the same time last year.

In most quarters, No. 1 prime bleached sulphite is quoted at 4 cents or higher, special qualities ranging in price up to 4.50 cents ex dock New York. About the minimum at which No. 1 bleached is available, it is reported, is 3.85 cents. Strong prime unbleached sulphite is quoted from 3 cents upward, a majority of importers asking 3.05 to 3.10 cents, and as high as 3.30 cents for some mill brands. Prime easy bleaching sulphite is firm at around 3.40 cents, and prime standard Swedish kraft is quoted from 3 cents to about 3.20 cents. Imported ground wood ranges in price from $38 to $41 a ton for dry, ex dock New York or other American Atlantic ports.

Current market quotations ex dock New York and receipts at the port of New York during September follow:

Bleached sulphite, No. 1	3.85- 4.50
Unbleached sulphite, strong, No. 1	3.00- 3.30
Unbleached sulphite, No. 2	2.85- 3.10
Easy bleaching sulphite	3.35- 3.55
Mitscherlich unbleached, genuine	3.35- 3.60
Mitscherlich unbleached, ordinary	3.00- 3.15
Kraft, standard Swedish	3.00- 3.20
Ground wood, per ton (dry)	38.00-41.00

J. Anderson & Co., 1,562 bls. from Hamburg, 250 Gothenburg and 330 Bremen; Banca Commerciale Italiana Trust Co., 868 bls. from Hamburg; Daniel M. Hicks, Inc., 336 bls. from Hamburg, 160 Oslo and 854 Trieste; Central National Bank, 1,500 bls. from Copenhagen and 1,475 Sundsvall; Johaneson, Wales & Sparre, 2,409 bls. from Gothenburg, 4,225 Sundsvall, 150 Copenhagen and 2,250 Hernosand; Tidewater Paper Mills Co., 12,395 bls. from Liverpool, N. S., 17,798 Gaspe and 7,329 Chatham, N. B.; Mead, Patton & Co., 14,054 bls, from Botwood, N. F.; Bulkley, Duton & Co., 1,735 bls. from Bremen, 1,930 Rotterdam, 1,750 Iggesund, 375 Sundsvall and 2,625 Gefle; Castle & Overton, 535 bls. from Rotterdam and 367 Bremen; Price & Pierce, 3,300 bls. from Gothenburg; Parsons & Whittemore, 300 bls. from Gothenburg; E. M. Sergeant Co., 2,709 bls. from Gothenburg and 825 Oslo; Chase National Bank, 1,600 bls. from Oslo; Chemical National Bank, 1,200 bls. from Oslo; Irving Bank and Trust Co., 1,225 bls. from Trieste and 125 Copenhagen; Empire Trust Co., 275 bls. from Oslo; National City Bank, 500 bls. from Hamburg; Brown Bros. & Co., 4,270 bls. from Trieste; American Exchange-Pacific National Bank, 800 bls. from Oslo; Buck, Kiaer & Co., 2,405 bls. from Oslo; M. Gottesman & Co., 5,200 bls. from Sebenico; Scandinavian Pulp Agency, 3,725 bls. from Sundsvall and 4,870 Skutskar; Pagel, Horton & Co., 750 bls. from Gefle; Lagerloef Trading Co., 111 bls. from Kotka; Order, 850 bls. from Copenhagen, 4,280 Bremen, 800 Hamburg, 1,270 Kotka, 510 Wiborg, 900 Mantyluoto and 1,401 Raumo.

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200 Fifth Ave., New York City

Watson, Frye Company
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Manufacturers of

Wood Pulp Grinders with 3 and 4 pockets. All Sizes.

Wet Machines, Deckers, also Combination, Wet Machines and Deckers.

Diaphragm Screens, Six to Eighteen Plate, inclusive.

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Union Wet Machines for Sulphite and Sulphate Pulp, 30 tons production Extra Dry.

Chippers, 48″, 84″, and 90″ with 3 and 4 knives.

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Paper Stock

Imports of papermaking materials into the United States continue fairly heavy, judging from manifests of steamers arriving at the port of New York in September. There were some sizable shipments received of old rope and bagging, and rag imports kept up to the volume of the several preceding months.

Imports of papermaking rags into this country in July, according to official Department of Commerce statistics, amounted to 41,176,640 pounds, valued at $828,540, compared with 54,867,320 pounds of a value of $1,414,087 in the similar month last year, while for the first seven months of this year imports reached a total of 289,651,794 pounds, contrasted with 352,614,-161 pounds in the corresponding period a year ago. Imports of waste bagging and waste paper in the first seven months of this year aggregated 73,035,967 pounds, against 68,964,369 pounds in the same time last year, while imports of old rope and miscellaneous paper stock amounted to 53,789,692 pounds, compared with 41,964,218 pounds in the first seven months of last year.

Imports of all kinds of paper stock other than wood pulp through the port of New York in the month of September, 1926, these data being taken from manifests of steamers arriving at that port during the month, follow:

Old Rope

Brown Bros. & Co., 399 bls. and 720 coils; Ellerman's Wilson Line, 74 coils; William Steck & Co., 68 bls.; S. Birkenstein & Sons, 104 coils; Daniel I. Murphy, Inc., 20 coils; W. Schall & Co., 119 coils and 32 bls.; Anchor Line, 67 coils; National City Bank, 202 bls.; Salomon Bros. & Co., 136 coils; United Fruit Co., 5 bls.; E. J. Keller Co., 260 bls. and 46 coils; Bulkley, Dunton & Co., 37 bls.; Mauroce O'Meara Co., 119 coils; International Purchasing Co., 55 bls.; Order, 187 coils and 111 bls.

Old Bagging

Rudolf Wolf, 34 bls.; Carolina Bagging Co., 148 bls.; Bulkley, Dunton & Co., 589 bls.; Fulton Bag & Cotton Mills, 119 bls.; Castle & Overton, 91 bls.; J. M. Johnson, 75 bls.; Whitney Central National Bank, 800 bls.; Anglo-South American Trust Co., 500 bls.; Central National Bank, 125 bls.; Urania Trading Co., 82 bls.; C. B. Richard & Co., 16 bls.; State Bank, 11 bls.; Stone Bros. Co., 66 bls.; Amsinck, Sonne & Co., 46 bls.; E. J. Keller Co., 1,208 bls.; Chase National Bank, 110 bls.; National Bank of Commerce, 36 bls.; Darmstadt, Scott & Courtney, 41 bls.; F. B. Vandergrift & Co., 51 bls.; Chatham Burlap Bag Corp., 110 bls.; Order, 404 bls.

Rags

S. Silberman Co., 1,040 bls.; I. Hinerfeld, 23 bls.; Sterling Mill Supply Co., 127 bls.; L. H. Abenheimer, 195 bls.; Robert Blank, 98 bls.; I. C. Harris, 38 bls.; American Rag Trading Co., 5 bls.; Castle & Overton, 201 bls.; Paul Berlowitz, 42 bls.; Stone Bros. Co., 84 bls.; I. Abela & Co., 86 bls.; Albion Trading Co., 88 bls.; S. Rubens & Bros., 32 bls.; Harmon G. Lichtenstein, 8 bls.; J. Cohen & Sons Co., 80 bls.; A. H. Searle, Inc., 217 bls.; P. Senegram Co., 12 bls.; Victor Galaup, Inc., 33 bls.; William Steck & Co., 119 bls.; Daniel M. Hicks, Inc., 98 bls.; J. B. Woodruff, 44 bls.; Gerofsky Bros., 50 bls.; E. J. Keller Co., 2,564 bls.; Salomon Bros. & Co., 65 bls.; E. Mayer, 83 bls.; J. M. Jaffe, 7 bls.; Lloyd Royal Belge, 6 bls.; Atlas Waste Mfg. Co., 197 bls.; S. Birkenstein & Sons, 84 bls.; Milton Snedeker Corp., 23 bls.; Gebruder Mayer, 40 bls.; G. P. Lotterhand, 4 bls.; Atterbury Bros., 42 bls.; American Wool Stock Co., 71 bls.; General Fiber Co., 139 bls.; Daniel I. Murphy, Inc., 280 bls.; George W. Millar & Co., 4 bls.; Royal Mfg. Co., 100 bls.; Chemical National Bank, 30 bls.; Chase National Bank, 1,796 bls.; Corn Exchange National Bank of Philadelphia, 29 bls.; National Bank of Commerce, 132 bls.; Equitable Trust Co., 899 bls.; Irving Bank and Trust Co., 69 bls.; National City Bank, 62 bls.; Central National Bank of Savings & Trust Co., 223 bls.; American National Bank, 47 bls.; Bank of the Manhattan Co., 21 bls.; Philadelphia National Bank, 26 bls.; Tradesmen's National Bank of Philadelphia, 196 bls.; Banca Commerciale Italiana Trust Co., 120 bls.; Bowery & East River National Bank, 139 bls.; Philadelphia Girard National Bank, 72 bls.; C. R. Spence & Co., 199 bls.; The Barrett Co.,

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The Mitts & Merrill Shredder will reduce magazines, books, old paper and boxboard, frozen or dried pulp laps, roll and sheet stock in a thoroughly economical manner.

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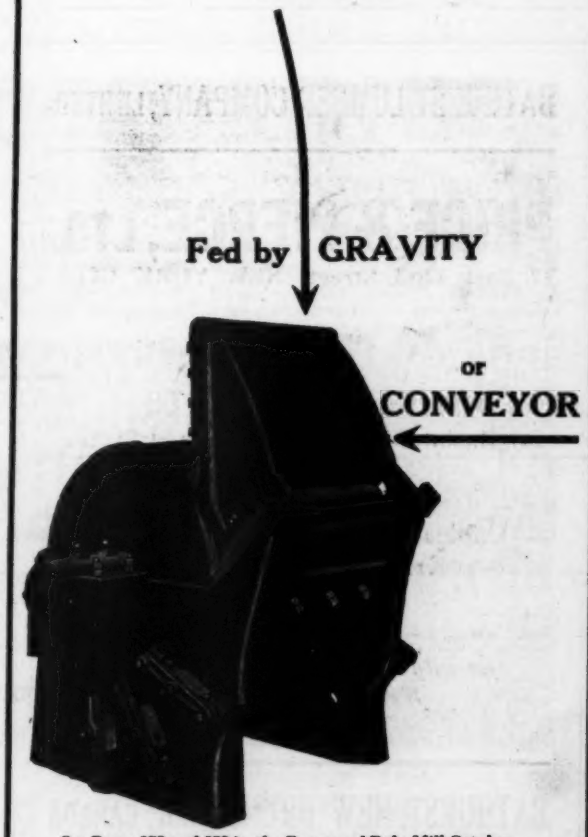
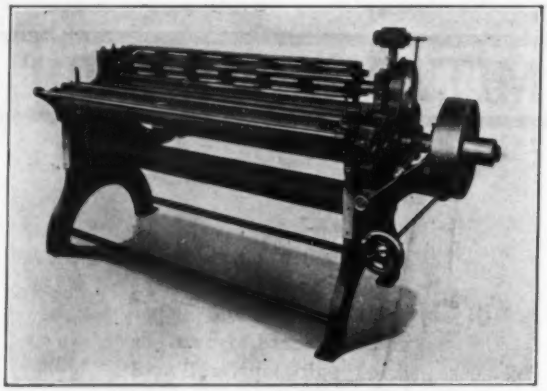


See Pages 372 and 373 in the Paper and Pulp Mill Catalog



Drum Winder Toilet Machine

THIS machine winds a hard roll. The winding shaft rotates between two drums. The slitters are located in one drum. Various lengths of collars can be furnished for the slitter drum to accommodate different lengths of rolls desired.

Two core shafts are furnished with each machine, also two back stand shafts for Jumbo Rolls. The machine is ball bearing throughout, including the drive pulley.

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Green Bay, Wis.

Selling Agents:
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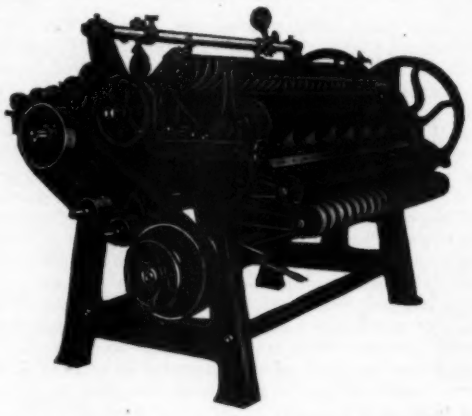

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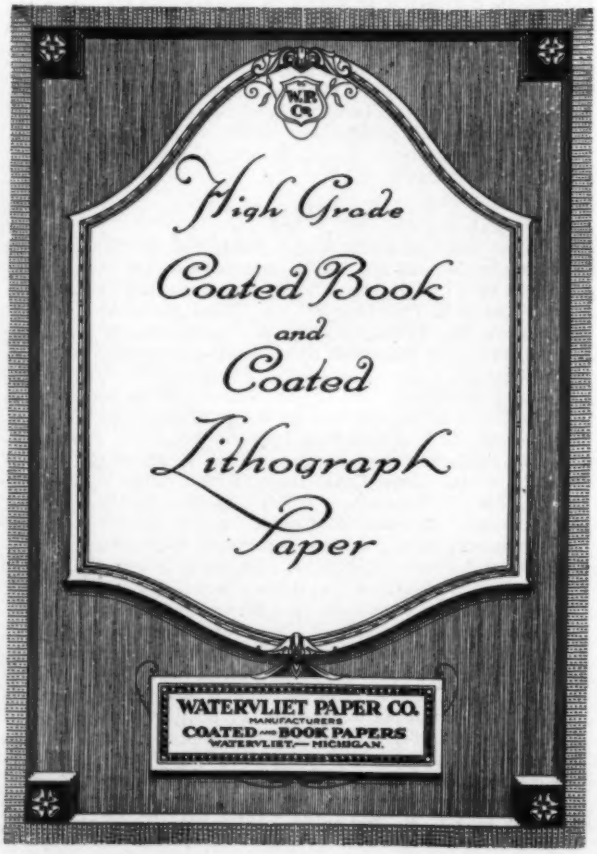

679 bls.; Judson Freight Forwarding Co., 8 bls.; A. W. Fenton, Inc., 404 bls.; Brown Bros. & Co., 582 bls.; United Fruit Co., 8 bls.; American Express Co., 33 bls.; Kidder-Peabody Acceptance Corp., 15 bls.; Amsinck, Sonne & Co., 87 bls.; Order, 2,412 bls.

Miscellaneous Paper Stock

Whaling Waste Products Co., 93 bls.; S. Birkenstein & Sons, 16 bls.; Salomon Bros. & Co., 183 bls.; Equitable Trust Co., 352 bls.; Kidder-Peabody Acceptance Corp., 72 bls.; Brown Bros. & Co., 21 bls.; Milton Snedeker Corp., 187 bls.; William Steck & Co., 113 bls.; Cohen & Co., 59 bls.; Amsinck, Sonne & Co., 8 bls.; E. Butterworth & Co., 73 bls.; Darmstadt, Scott & Courtney, 35 bls.; E. J. Keller Co., 409 bls.; Anglo-South American Trust Co., 676 bls.; Order, 1,701 bls.

Paper

Imports of paper into the United States during the month of July, 1926, amounted in value to a total of $11,556,091, showing an appreciable gain over the imports in the similar month last year valued at $9,701,927. Imports during the first seven months of this year were valued at $78,774,226, compared with $68,954,176 in the corresponding time a year ago. Newsprint from Canada, of course, accounted for the great bulk of these imports. For example, of all the paper of all kinds imported in the first seven months of 1926 which, as stated above, were worth $78,774,226, newsprint from Canada amounted to $64,-103,799.

Paper imports in September were about normal, judging from manifests of steamers arriving at New York last month. A feature was the sizable shipments of strawboard received from Holland. Imports of paper of all kinds through the port of New York during September, these data being taken from manifests of vessels reaching that port last month, follow:

Printing

H. Reeve Angel & Co., 304 bls. and 24 cs. and 658 reels from Hamburg; R. F. Downing & Co., 12 cs. from Hamburg; Irving Bank and Trust Co., 60 bls. from Hamburg; Public Press Corp., 58 reels from Hamburg; Oxford University Press, 40 cs. from Liverpool; B. F. Drakenfeld & Co., 116 cs. from Liverpool; Perkins-Goodwin Co., 72 rolls from Rotterdam; E. Dietzgen & Co., 36 cs. from Rotterdam, 29 cs. Hamburg and 142 rolls Copenhagen; New York Times, 1,604 rolls from Botwood; Tidewater Paper Mills Sales Corp., 1,650 rolls from Botwood; McCall Co., 224 rolls from Botwood; Perry, Ryer & Co., 409 cs. from Glasgow; Keuffel & Esser Co., 163 rolls from Hamburg; International Forwarding Co., 26 cs. from Antwerp; P. C. Zuhlke, 66 cs. from Antwerp; Maurice O'Meara Co., 25 cs. from Bremen and 70 cs. Kotka; Paul E. Vernon Co., 19 cs. from Kotka; W. Hartmann & Co., 25 bls. from Hamburg; C. B. Richard & Co., 52 rolls from Hamburg; Order, 293 reels from Bremen, 33 bls. Hamburg and 108 cs. and 24 bls. Kotka.

Cigarette

American Tobacco Co., 1,600 cs. from Bordeaux; R. J. Reynolds Tobacco Co., 840 cs. from St. Nazaire and 300 cs. Havre; DeManduit Paper Corp., 700 cs. from St. Nazaire; Standard Products Corp., 315 cs. from Havre and 6 cs. Southampton; P. J. Schweitzer, 4 cs. from Havre and 3 cs. Marseilles; M. Spiegel & Sons, 22 cs. from Genoa; Surbrug Co., 67 cs. from Havre; British-American Tobacco Co., 5 cs. from Liverpool; Southern Pacific Line, 3 cs. from Havre.

Wrapping

Bowrey & East River National Bank, 15 bls. from Genoa; Maurice O'Meara Co., 214 bls. from Hamburg; International Forwarding Co., 13 bls. from Hamburg; Blauvelt-Wiley Paper Mfg. Co., 146 bls. from Glasgow; Schenkers, Inc., 32 cs. from Hamburg; Bendix Paper Co., 10 cs. from Hamburg; J. P. Heffernan Paper Co., 52 bls. and 6 cs. from Gothenburg and 61 cs. Rotterdam; Borregaard Co., 3,510 reels and 280 bls. from Gothenburg; F. C. Stryle, 37 cs. from Antwerp; Thomas Barrett & Son, 44 bls. from Gothenburg; D. S. Walton & Co., 96 bls. from Copenhagen; Robert Wilson Paper Corp., 7 cs. from Havre and 24 cs. Glasgow; E. Dietzgen & Co., 4 cs. from Antwerp; C. Steiner, 13 bls. from Rotterdam; Foreign Paper Mills, 531 rolls from Gothenburg; Arkell Safety Bag Co., 319 rolls from Gothenburg; Denison Mfg. Co., 20 reels from Glasgow;

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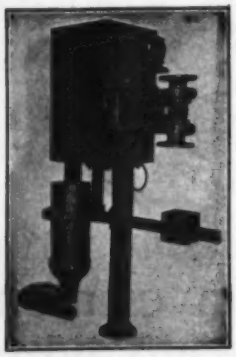

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Woolen Manufacturers Since 1856

REPRESENTATIVES

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Commonwealth Bank, 10 cs. from Hamburg; Order, 14 bls. from Rotterdam.

Writing

Keuffel & Esser Co., 3 cs. from Marseilles; Guibout Freres & Co., 8 cs. from Southhampton and 8 cs. Havre; Republic Bag & Paper Co., 9 cs. from Rotterdam; Sanderson & Son, 3 cs. from London; W. J. Byrnes & Co., 3 cs. from Havre; F. C. Strype, 4 cs. from Havre; J. C. Robold & Co., 8 cs. from London; Stern Bros., 20 cs. from Bremen; American Express Co., 8 cs. from Havre; L. Bamberger & Co., 4 cs. from Havre; F. L. Kraemer & Co., 6 cs. from Southampton; Order, 50 cs. from Hamburg.

Drawing

H. Reeve Angel & Co., 16 cs. from London; Keuffel & Esser Co., 120 cs. from Hamburg and 12 cs. from Southampton.

Filter

E. Fougera & Co., 48 cs. from Bordeaux; H. Reeve Angel & Co., 41 cs. from London and 3 cs. Southampton; J. Manheimer, 109 bls. from Southampton; Lunham & Reeve, Inc., 2 cs. from London; A. Giese & Son, 40 cs. from Bordeaux; C. Schleicher & Schull Co., 5 cs. from Hamburg.

Tissue

W. J. Byrnes & Co., 3 cs. from Liverpool; F. C. Strype, 65 cs. from Liverpool; W. J. Rames & Co., 6 cs. from Liverpool; Schenkers, Inc., 48 cs. from Hamburg; Milton Snedeker Corp., 13 cs. from Hamburg.

Hanging

D. C. Andrews & Co., 6 bls. from London; Panama-Pacific Line, 4 cs. from London; A. C. Dodman, Jr., Inc., 33 bls. from Liverpool and 30 bls. Southampton; C. A. Haynes & Co., 40 bls. from Southampton and 57 bls. London; C. Grimmer & Son, 13 bls. from Hamburg; J. E. Bernard & Co., 19 bls. from Antwerp; F. A. Binder, 3 bls. from Bremen; F. J. Emmerich & Co., 3 bls. from Hamburg, 3 bls. Liverpool and 3 bls. Southampton.

Board

Bendix Paper Co., 60 cs. from Hamburg; Metropolitan Import & Mfg. Co., 104 cs. from Hamburg; Haas & Bros., 161 reels from Rotterdam; Adrian Vuyck, 2,350 reels from Rotterdam; First National Bank of Brooklyn, 76 reels from Rotterdam; Perkins-Goodwin Co., 486 reels from Rotterdam; Grand Corrugated Paper Co., 170 reels from Rotterdam; Empire Paper Products Co., 126 reels from Rotterdam; Hensel, Bruckman & Lorbacher, 16 cs. from Hamburg; Davies, Turner & Co., 8 cs. from Liverpool; C. Hammer, 9 rolls from Rotterdam; Favor, Ruhl & Co., 5 cs. from London; Coty, Inc., 161 cs. from Havre; Wilkinson Bros. & Co., 32 rolls from Gothenburg; Happel & McAvoy, 7 cs. from Havre; Premier Flong Co., 50 cs. from Hamburg; Order, 189 reels from Rotterdam and 15 cs. London.

Miscellaneous

Guaranty Trust Co., 125 cs. from Hamburg; Quality Art Novelty Co., 45 cs. from Hamburg and 14 cs. Havre; P. H. Petry & Co., 15 cs. from Hamburg, 4 cs. Rotterdam and 9 cs. Havre; Whiting-Patterson Co., 6 cs. from London, 6 cs. Antwerp, 25 cs. Southampton and 7 cs. Hamburg; Peerless Leaf Tobacco Co., 14 cs. from Rotterdam; American Express Co., 7 cs. from Genoa; Keller-Dorian Paper Co., 11 cs. from Havre and 27 cs. Southampton; C. H. Boulin, 28 cs. from Havre; Japan Paper Co., 96 cs. from Havre, 5 cs. Bordeaux, 10 cs. Rotterdam and 69 cs. Genoa; Coenca-Morrison Co., 15 cs. from Havre; Hensel, Bruckman & Lorbacher, 3 cs. from Havre; R. M. Moto, 6 cs. from Southampton; Burroughs, Welcome & Co., 14 cs. from Southampton; G. W. Sheldon & Co., 3 cs. from Southampton; F. L. Kraemer & Co., 2 cs. from Southampton and 24 cs. Bremen; Meadows, Wye & Co., 13 cs. from Rotterdam; D. C. Andrews & Co., 36 cs. from Hamburg; Montag Bros., 47 cs. from Hamburg; Judson Freight Forwarding Co., 13 cs. from Havre; Anchor Line, 23 cs. from Glasgow; Atlantic Forwarding Co., 13 cs. from Hamburg; International Forwarding Co., 6 cs. from Hamburg; Freedman & Slater, 3 cs. from Hamburg; Maurice O'Meara Co., 24 bls. from Hamburg; Pennsylvania Railroad Co., 3 cs. from Hamburg; C. L. Schneider, 11 cs. from Hamburg; United American Lines, 5 cs. from

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Hamburg; Goldman, Sachs & Co., 6 cs. from Havre; C. B. Richard & Co., 9 cs. from Bremen; Davies, Turner & Co., 3 cs. from Southampton; F. C. Strype, 283 cs. from Hamburg; H. Glass Co., 23 cs. from Havre; J. E. Bernard & Co., 3 cs. from Gothenburg; Borden & Riley Paper Co., 29 cs. from Antwerp; Causon & Montgolfer, 11 cs. from Havre; Tamm & Co., 14 cs. from Rotterdam and 5 cs. Hamburg; S. Gilbert, 7 cs. from Rotterdam; H. Reeve Angel & Co., 18 cs. from London and 3 cs. Southampton; Charles W. Williams & Co., 16 cs. from Antwerp.

Foreign Trade Opportunities

Additional information regarding the following foreign trade opportunities issued by the Bureau of Foreign and Domestic Commerce of the United States Department of Commerce may be obtained from the Bureau in Washington, D. C., or its branch offices. It is requested that the number of the inquiry be given at all times.

No. 21,948—Paper manufacturing machinery. Vienna, Austria. Agency desired.

No. 21,938—Paper and pulp manufacturing machinery. Montreal, Canada. Agency desired.

No. 21,958—Paper and paper goods. Rio de Janeiro, Brazil. Agency desired.

No. 21,940—Printing paper in large quantities. Bombay, India. Agency desired.

No. 21,959—Toilet paper. Alexandria, Egypt. Agency desired.

No. 21,965—Printing paper and stationery. Bombay, India. Agency desired.

No. 22,026—Paper bag manufacturing machinery. Buenos Aires, Argentina. Sole agency desired.

No. 22,003—Stationery. Hawkesbury, Canada. Purchase desired.

No. 22,086—Stationery. Prince Rupert, Canada. Purchase desired.

No. 22,019—Stationery. Montevideo, Uruguay. Agency desired.

No. 22,234—Old newspapers. Bombay, India. Agency desired.

No. 22,238—Paper, printing, writing and wrapping, and envelopes. Alexandria, Egypt. Agency desired.

No. 22,232—Paper and printing materials, and stationery. Tangier, Morocco. Purchase and agency desired.

No. 22,233—Ticker stock paper in rolls, surface-dyed, with white or gray filler. Sydney, Australia. Purchase desired.

No. 22,235—Vulcanized fiber in sheets. Dresden, Germany. Agency desired.

No. 22,231—Wall paper. Alexandria, Germany. Agency desired.

No. 22,236—Wood cellulose in sheet form. Zurich, Switzerland. Agency desired.

No. 22,339—Boxes and equipment for packing candy. Havana, Cuba. Purchase desired.

No. 22,327—Oil paper for covering shoes in factory. Milan, Italy. Purchase desired.

The Trimbey Machine Works, Glens Falls, N. Y., reports that they have recently supplied metering systems and regulators for: the Hennepin Paper Co.; Northwest Paper Co.; Algonquin Paper Co.; Van Gelder Zonen of Amsterdam, Holland; are now building a system for the Washington Pulp and Paper Corp., and a third system for Edward Lloyd, Ltd., of England. During the past six months they have shipped more than twenty consistency regulators to Germany and Czecho-Slovakia through their Holland agent, besides several to Norway and Denmark through their Oslo representatives. Designs have been prepared and the orders are now pending for six large metering systems and fifteen consistency regulators for Canadian mills.

The Link-Belt Co., of Chicago, Philadelphia and Indianapolis, announces the opening of a new branch office at 131 Genesee St., Utica, N. Y. This office is to be devoted especially to the sale of Link-Belt Silent Chain and Link-Belt Roller Chain. Mr. F. P. Hermann, formerly with the New York office, will be in charge.

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No matter how limited your requirements—or where you are located, you can be served with Diamond Alkalies quickly and economically.

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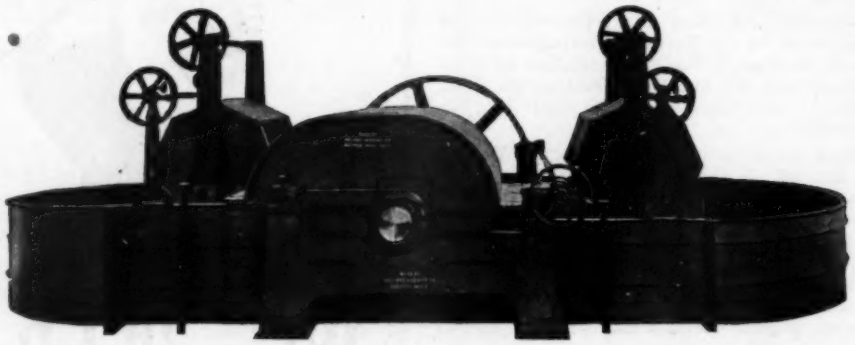


Washing and Beating Engines, Wood Pulp Grinders, Barkers, Chippers, Rag and Paper Dusters, Rag Cutters, Hydraulic Pumps and Presses, Hercules Water Wheels and Governors, Super-Calenders, Platers, Cotton and Paper Rolls.

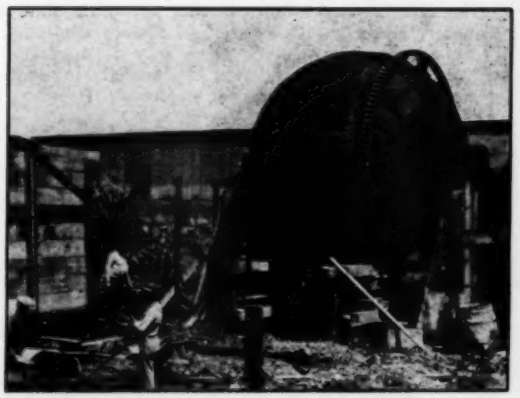
16 Years Ago This Biggs Rotary Was New

FOR eight years it worked steadily turning out uniformly good results.

Then the mill closed down and was abandoned. The Biggs Rotary was left exposed to the elements, uncared for, and with the globe half full of debris.

Eight years later the mill was purchased and reconditioned. The main piers supporting the Biggs Rotary, built of yellow pine, had rotted off, but on replacing them the rotary went back to work *without repair or adjustment.*

Records like this prove that Biggs Bleachers are built to endure and to render service even though abuse is added to their regular schedule of work.



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